SID MEIER'S

CIVNET™

INSTRUCTION
MANUAL

MICRO PROSE

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SID MEIER'S CIVNET

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SID MEIER'S
CIVNET ™

KIDS TO ADULTS

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SID MEIER'S CIVNET is the next evolutionary step in addictive gameplay. *Civilization*, its predecessor, cast you as the ruler of an infant civilization, struggling to survive and prosper in the earliest moments of history. Eventually, growth and exploration brought you into competition with ruthless, competent, but sometimes predictable computer opponents. **CIVNET** puts you in the same situation, but lets you compete against other humans—clever, vicious, unpredictable humans. Now you can play head-to-head against a single human rival via modem or go all out with up to six opponents in a network game. Of course, you can still pit yourself against the computer opponents to fill those late nights or stolen moments of the day when you just *need* to control the world.

CIVNET combines the forces that have shaped history and the evolution of technology in a fiercely competitive environment. You have great flexibility in your plans and strategies, but to survive you must successfully respond to the strategies of other players—human or computer—as well as to sudden, disastrous natural occurrences and the brutal intrusion of barbarian hordes.

Both you and your opponents begin with a small band of colonists surrounded by the hazards and delights of unexplored territory. Each decision you make can have important ramifications later. Should you build a city on a coast or inland? Should you concentrate on military production or agricultural improvement? Innovative displays make it easy to understand the shifting situation and implement action. If you prove an able ruler, your civilization grows larger and even more interesting to manage. The inevitable contact with neighboring players opens new doors of opportunity: treaties, embassies, sabotage, trade, and war.

As time passes, you are confronted with increasingly difficult decisions. First, you must think tactically. Where is the optimum location for another city? When should you produce specific military units and city improvements? How rapidly should you explore the surrounding land? Soon, circumstances demand that you formulate strategic plans. Should you pursue war or peace with neighbors? When should you explore and expand overseas? Is it advantageous to change your type of government? Where should you focus technological research?

The success of the civilization that you build depends on your decisions. As ruler, you manage the economy, diplomacy, exploration, research, and the war machine of your civilization. Your policies must be flexible to fit an evolving world. Military units inevitably become obsolete and need replacement as you gain more advanced technologies. The balance of power among your rivals shifts often. You might have to modify your economic and governmental policies, lest you fall behind in a critical area. The civilizations of Alexander the Great, the Hittites, Napoleon, and Genghis Khan (to name just a few) all held pride of place on the world's stage at one time. All eventually collapsed. In **CIVNET**, the challenge is to build an empire that stands the test of time. You might succeed where great predecessors have failed. If you locate cities properly, build them soundly, defend them aggressively, and neutralize the danger from potential enemies, the descendants of your first tiny tribe might not only survive, but lead the colonization of space.

There is no single driving force behind the urge toward civilization, no one goal toward which every culture strives. There is, instead, a web of forces and objectives that impel and beckon, shaping cultures as they grow. In CivNet, there are four basic impulses that seem to be of the greatest importance to the health and flexibility of your fledgling society.

Exploration

An early focus in CivNet is exploration. You begin the game knowing almost nothing about your surroundings. Most of the map is dark. Your units move into this darkness of unexplored territory and discover new terrain: Mountains, rivers, grasslands, and forests are just some of the features they might reveal. The areas they explore might be occupied by minor tribes or another player's units. In either case, a chance meeting provokes a variety of encounters. As your units "map" the unknown by revealing terrain squares that once were black, they also lessen the likelihood that you will be surprised by random barbarian attacks.

Economics

As your civilization grows, you need to manage its ever-more-complex production and resource requirements. Using the tax and luxury rates and choosing the most productive terrain for your purposes, you can control the speeds at which your population grows larger and your cities produce goods. By setting taxes higher and science lower, you can tilt your economy into a cash cow. You can also adjust the happiness of your population. Perhaps you'll make luxuries more available, or you might clamp down on unrest with a larger military presence. You can establish trade routes with other powers to bring in supplemental income every turn.

Knowledge

On the flip side of your economics management is your commitment to scholarship. By setting taxes lower and science higher, you can increase the frequency with which your population discovers new technologies. With each new advance, further paths of learning open up and new units and city improvements become available for manufacture. Some technological discoveries let your cities build unique Wonders of the World.

Conquest

Perhaps your taste runs to military persuasion. *CivNet* allows you to pursue a range of postures from pure defense to imperialistic aggression. One way to win the game is to be the last civilization standing when the dust clears. Of course, you'll face both random barbarian attacks and calculated sorties by your human opponents.

THE BIG PICTURE

A winning strategy for *CivNet* is one that combines all of these aspects into a flexible whole. Your first mission is to survive; your second is to thrive. It is not true that the largest civilization is necessarily the winner, nor that the wealthiest always has the upper hand. In fact, a balance of knowledge, cash, and military might allows you to respond to any crisis that occurs, whether it is a natural disaster, an aggressive rival, or an upsurge of internal unrest.

WINNING

To win *CivNet*, you must follow one of two broad strategies to a final goal: Either win the space race or conquer the world. The first civilization to colonize Alpha Centauri wins; this nation most often has a large factory base dedicated to producing the specialized components of spacecraft, and a head-and-shoulders lead in technological development. However, it's possible to use industrial espionage and judicious invasions to steal the necessary advances, while sabotaging the production lead of a more-advanced but less-well-defended opponent. A leader who pursues the second option, conquering the world, is likely to focus on military strategy, though building a strong economy and financing insurrections can be pretty successful, too. See **Winning the Game** for an in-depth analysis of *CivNet*'s scoring system.

THE VARIOUS DOCUMENTATION

It's a truism at computer game companies that most customers never read the manual. Until a problem rears its head, the average player just bulls through by trial and error; it's part of the fun. When a problem does come up, this type of player wants to spend as little time in the book as possible, then get back to the game. For those of you who just need a quick reference, the blue section goes through the game screen by screen and unit by unit.

For the rest of you, we've tried to organize the white chapters in the order that you'll need them if you've never played *Civilization* or *CivNet* before. If you're new to *Civ*, the sidebars on concepts should help you understand the fundamentals of the game.

The **Technical Supplement** is the place to find installation and startup instructions and any late changes to the game. Since it was written later, the information in it supersedes anything in the manual.

The README file that comes on the CD-ROM has the rundown on the very latest changes (due to printing and binding time, the manual has to be completed before the programmers recommend their final tweaks). That info supersedes even the Technical Supplement).

In addition to the printed stuff and the README, CivNet comes with two kinds of on-screen help. Click on the CivGuide icon in the CivNet group to enter an interactive tutorial, which explains and demonstrates important concepts and game functions in an animated, self-paced guide. You can choose a topic you're having trouble with and watch units scamper around actual game screens as the explanation progresses. Finally, the Civilopedia menu in the game itself gives you access to short explanations of every unit, advance, and city improvement, and it allows you to enter the CivGuide from inside the game.

You can play CivNet using a mouse only or using a combination of both mouse and keyboard. Many people find that the *short-cut keys* on the keyboard significantly speed up their play.

Using a Mouse: Throughout the text, we assume that you understand basic mouse functions and terms, like "clicking and dragging." Since not everybody knows these things, we've provided brief definitions of how we use the most common terms. One preliminary note: CivNet puts both buttons on a two-button mouse to use. If you are using a three-button mouse, the center button has no function for this game.

- "Clicking" refers to placing the mouse pointer (usually a torch in this game) over an area of the screen and clicking with the *left* mouse button.
- "Right-clicking" is clicking with the *right* mouse button.
- "Dragging" means holding the left button down while moving the mouse.
- "Selecting" means clicking on something.
- "Pressing a button" with the mouse means clicking on one of the on-screen buttons.
- "Running your mouse" over something means moving it over an object or area without clicking.
- You can "scroll" some of the menus and boxes in the game by dragging the button along a slider bar that's on one side of the box.

Menus: The MENU BAR runs across the top of the screen. As is standard in Windows games, clicking on the name of a menu opens that menu, giving you access to the menu options. If you prefer not to use the keyboard, you can play CivNet using the mouse and menus exclusively.

INTERFACE CONVENTIONS

Short-Cut Keys: Each of the most often used menu options in *CivNet* has a *short-cut key* (⬚R for Roads, for example), which is noted on the menu. Pressing this key (or combination of keys) has the same effect as selecting the option from the menu. Another quick way to use menu options is also a Windows standard. The name of each menu has one underlined letter. Press and release the ⬚Alt key and then type that letter to open the menu. The name of each option on the menu also has one underlined letter. Typing that letter when the menu is open activates the option.

Cursors: The mouse pointer, or cursor, has many different shapes in *CivNet*, depending on what task you're currently attempting.

- Most often, the cursor looks like a torch.
- A city skyline indicates that you can click to open the CITY DISPLAY of the city on which your mouse pointer is positioned.
- A letter "I" surrounded by a circle indicates that you can click to see the status of the unit or units on which your mouse pointer is positioned.
- A bold (black) arrow indicates the direction the unit on which your mouse pointer is positioned will move when you click.
- A question mark indicates that you can click on the spot where your mouse pointer is positioned to see an explanation.
- A cross-hair indicates that you can click on the spot where your mouse pointer is positioned to recenter the active VIEW UNITS window on that spot.
- As in most Windows programs, an I-beam or vertical line indicates that you can type in text from the keyboard (you'll see these cursors in the CHAT window, and in various starting screens).
- As in most Windows programs, a double-ended arrow indicates that you can resize the window frame on which your mouse pointer is positioned.
- As in most Windows programs, an hourglass indicates the program is working; please wait.
- As in most Windows programs, an outlined arrow indicates that you can select an option from the menu bar or a display.

If you've ever played **Civilization**, you're already familiar with many of the concepts presented in this tutorial. However, whether you played the DOS, Windows, or Mac version, you'll find that some features not only look different, but also function differently in **CivNet**. The multi-player features are, of course, new to everyone.

Experienced **Civilization** players might find the opening strategy in this tutorial somewhat conservative, and they're right. Basic **CivNet** strategies are different than those for the original game, because human opponents tend to be more aggressive and more clever than the AI. You'll need to pay more attention to defense than you might in a single-player game, and you'll probably want to expand into second, third, and additional cities less quickly.

Instructions that you should follow are italicized, and the explanations of what's happening or why you should follow them are set in regular type. The other chapters in the manual go into greater detail. We wanted the tutorial to be a quick taste of the game. One final note: We've set up this tutorial to introduce you to the basic moves and concepts of **CivNet.** The most basic concept is random chance. Events like floods and volcanic eruptions happen occasionally in **CivNet.** Battles occur between civilizations you've not yet met. Although we've tested the tutorial carefully, this random factor can mean that your discoveries might occur a turn or two earlier or later than we say they will. You might meet a unit before we expect you to—or it might have gotten wiped out before you find it. We describe the most common timing and events. If you get a particularly unexpected result, feel free to restart and try again.

To begin the guided tour, fire up the game and select LOAD A SAVED GAME *from the* PRE-GAME OPTIONS *screen. Load the game called* **tutorial.sav***, then select* TURN BASED MOVEMENT *and choose to play as the Americans. Name yourself however you see fit.* We'll be using the default settings on the OPTIONS menu, so you shouldn't need to change anything.

FOUNDING YOUR FIRST CITY

When the window of history first opens on your civilization, all you have is a single, hardy group of Settlers. Step one is erecting your first city, but where you put it is one of the most important decisions you'll make in the game. Take a good look at the terrain around you.

Your Settlers unit is on a River square. Rivers are good places to build cities, but not the best. You can't tell by looking at them whether citizens working them can produce only wheat, or both wheat and a shield.

To the west (left) is a Hill square, to the east, a Desert. Southwest is a Swamp, and southeast is a Plain. This would be a mediocre place to put your first city. The plains, however, look interesting. *Move your unit diagonally onto the Plain square, using the mouse or the* ③ *key on the numeric keypad.*

This position is certainly better than the place you started. While you still have use of everything that you could see before, except for the river north of the Hill, you now have access to an Ocean square. It might be a lake, of course, but there's a good chance it's not. The second Plain and the Jungle (to the southeast) would be useful. Still, this location is not quite good enough. Twenty years pass every turn, so you don't want to waste too much time searching for the perfect spot. You can probably afford one more try: *move your Settlers due south using the mouse or the* 2 *key).*

This is more like it. You've lost access to the two other River squares and to the first Hill, but you've gained another Hill, a Grassland and a special terrain square—a Jungle with Gems. In addition, you're still on the ocean, so this will be a port city. *Choose the* FOUND NEW CITY *option on the Orders menu or press the* B *key to build the city. Name your new city whatever you like,* but we'll refer to it as Washington.
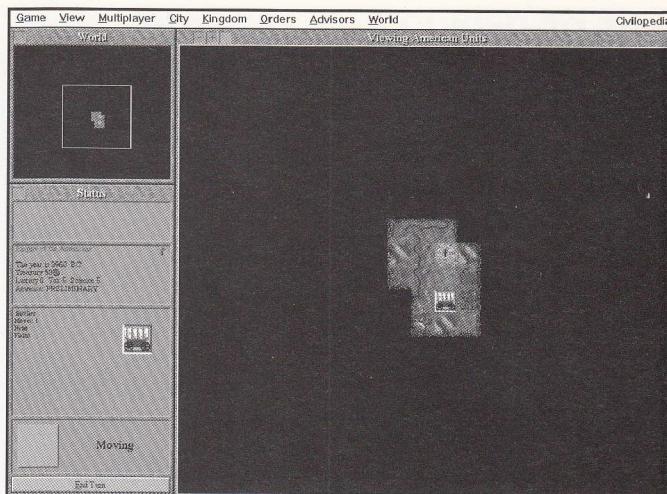
Your Settlers have found the right place to build your first city.

The default **CivNet** setup has the DETAILED REPORTS option turned on. If you haven't changed it, as soon as you establish Washington, an INCOMING REPORTS box pops up, showing your domestic advisor. He offers you the option to CONTINUE with the game, or GO TO CITY and take a closer look. Since it's a good idea to familiarize yourself with this data right off, *click GO TO CITY.* The CITY DISPLAY opens. What you see reflects what this city produces every turn (until either you or population growth changes something).

CivNet chooses what it considers the most productive setup for this particular spot, and assigns workers accordingly. Citizens automatically work the city square, and in Washington, they also harvest the River square nearby. Your entire population is working, and they're content.

WASHINGTON'S CITY DISPLAY

World Window

Status Window

View Units Window
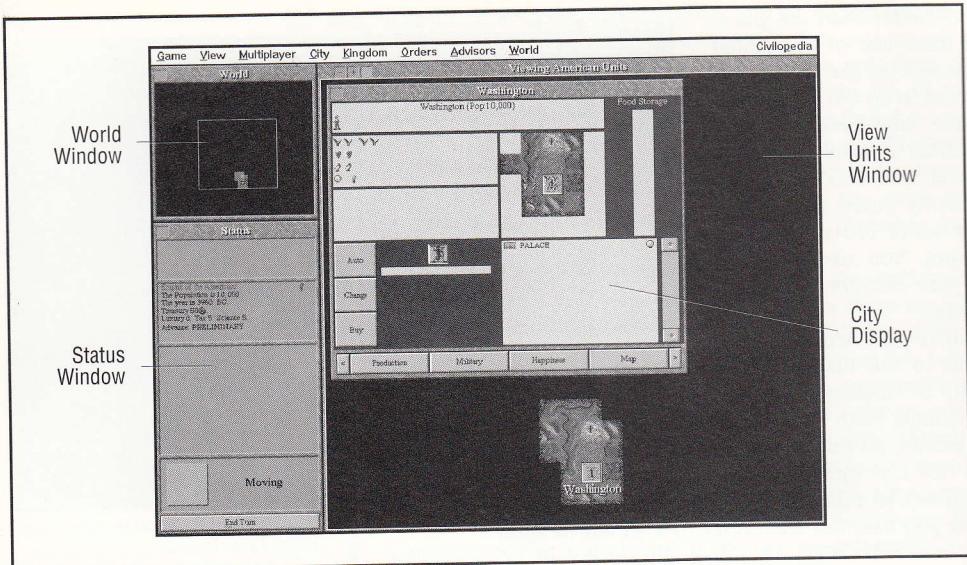
City Display

Washington's CITY DISPLAY shows all of your capital's statistics

You can change citizen assignments if you want to focus production differently. The citizen working the River square is generating two wheat, one shield, and one double arrow. *Click on the River square to "pick up" the worker there, and click again on the Ocean to "set him down."* Notice that a worker in the Ocean produces one wheat icon (okay, so they're fishing—the wheat icon represents food of all kinds) and two double arrows. If you need the trade income that double arrows generate, you might prefer to assign your citizen to work the Ocean, even though he produces no shields and one less wheat icon per turn. For now, however, you'd prefer the two wheat to the two double arrows, so *click on the Ocean and then click again on the River square west of Washington* to return the citizen there.

Washington's workers are growing four units of food, which is twice what they eat. The excess wheat is going to pile up in storage. That's good for growth. Your citizens also generate two shields every turn, representing raw materials. Since Washington is not yet supporting units that need upkeep, these shields go directly into the PRODUCTION box. At this rate, it will only take four more turns to build your first Militia unit. Last, but not least, Washington is generating two units of trade income. One goes to research (the lightbulb), and the other to tax revenues (the coin).

You'll notice in the IMPROVEMENT roster that there is already a Palace in Washington. The Palace indicates that this city is your capital. Your initial Palace requires no maintenance. The coin in the far column denotes that you can sell your palace for cash if you get strapped. (You'd rather not do that, because if you have to build a second Palace, you'll have to pay a maintenance cost of five coins per turn!)

World

Viewing American Units

Which discovery should our wise men be
pursuing, sire? Pick one...

- ○ Alphabet
- ○ Masonry
- ● Bronze Working
- ○ Ceremonial Burial
- ○ Horseback Riding
- ○ The Wheel
- ○ Pottery

OK

Status

The Population is 10,000
The year is 3840 B.C.
Treasury 81 ⓒ
LIBERTY® 1st S. Prince S
Advance PRELIMINARY

Upkeep
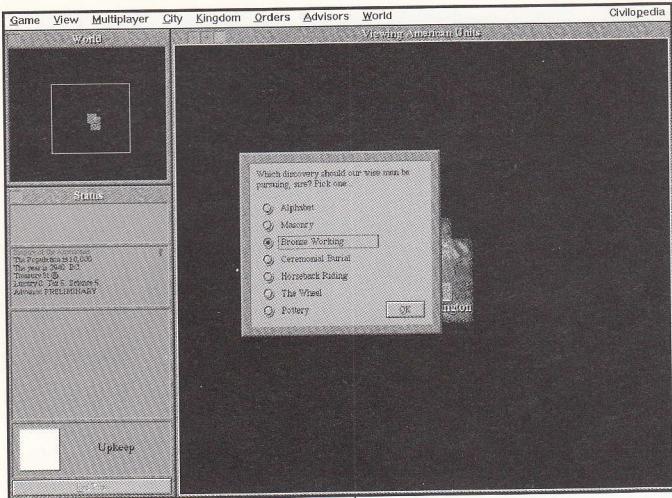
*The RESEARCH OPTION menu allows you to
choose the advance your civilization
would next like to gain.*

list includes all of the advances that you can
research at this time. Unfortunately, your scientists
can only work on one project at a time. You must
choose which one is most important to you. For this
tutorial, *select BRONZE WORKING, then click on OK.*

Why Bronze Working? We're playing a defensive
game, remember. A Phalanx is a more powerful
defensive unit than a Militia, and the discovery of
Bronze Working allows you to produce a Phalanx.
The other options, though useful, are not as
important right now.

At this early stage of *CivNet*, your options are
limited by the small size of your civilization. Until you
have a new unit or your city grows in size, there is
little else for you to do. *Keep clicking END TURN until
your Militia unit flashes on and off in your city square,*
which means it is complete (it should be three turns
or so). Now, you need to give the unit orders.

Your citizens can only work on terrain squares
within the city radius. It is also vital to remember that they cannot work on any
unexplored squares in that radius. *Select CITY DISPLAY from the VIEW menu (you can
also press the shortcut key* F4 *), and check the CITY MAP.* Some of the squares are
flat yellow indicating that they are unexplored. You'll use Washington's first military
unit to solve this problem.

When the Militia unit is flashing, it's ready for orders. *Move it southeast* 3 *out
of the city.* Your turn ends automatically when you have finished moving your last
unit—your only unit in this case. A Militia unit has only one movement point, so it
cannot move back into the city this turn. This means your city is undefended. Isn't
that a risk? Yes, and if you're concerned about surprise attacks, or know that there's
an enemy unit out there, you shouldn't take this risk. But early in the game, the
world is sparsely populated. Taking a chance here might reveal particularly prime
terrain, which could help your civilization grow. In this case, you can see more
coastline, confirming your supposition that you're next to the sea.

*Next, move your cursor over Washington's city square; the shape should
change into a skyline. When it does, click once.* This is another way to access the
CITY DISPLAY. Notice the production box still shows a Militia icon. If you let it, your
city will go on merrily producing Militia units until the cows come home. That's not
what you want. *Click on the CHANGE button.*

It's going to take another turn or two for your scientists to finish researching Bronze Working, and you'll want to make a Phalanx unit as soon as possible afterward. What you need to do now is somehow save up Washington's production shields until then. Another Militia unit might be finished too soon, but a Barracks is expensive. There's no way this project will be finished before the advance is discovered. *Highlight Barracks, then click the OK button.*

During the next turn, press the 7 *key to return your Militia to the city.* Washington is defended again. Also, it is likely your researchers notify you that they have discovered Bronze Working (if not this turn, next turn). After several screens describing the benefits of this new technology, they ask for a new assignment.

Before you choose, notice that the discovery you've made has added two more choices to the list: Currency and Iron Working. Many advances open up new avenues of research, as well as making it possible to build new things. *Select The Wheel and click OK. Immediately open the CITY DISPLAY and change Washington's production to Phalanx.* This transfers all the shields that you accrued toward building a Barracks to the production of a Phalanx unit.

On the following two turns, send the Militia unit out to explore the terrain square southwest of Washington, and return to defend the city. When you're done, you can see on the CITY Map that nearly the entire City Radius is open for productive use — those corner squares are never available to the city, and always remain blank. The east northeast square is still unexplored, but you can guess it's Ocean.

While all the darkness on the map makes it tempting to send your Militia unit out exploring right away, that would be risky. *Once you've finished exploring the city radius, press* F *or choose the FORTIFY option on the ORDERS menu.* The Militia fortifies in Washington, which serves two purposes. First, this unit is now defending the city from attackers in an entrenched position, and earns a bonus to it's defense strength. Second, the presence of a garrison in the city helps keep the population from expressing any dissatisfaction with your rule.

Once again, there's nothing to do but wait. *Click END TURN until the number on your city square increases (about three times). Open the CITY DISPLAY and check Washington's POPULATION roster.* You have another citizen. She consumes two wheat each turn, just as the first fellow does; she also works another terrain square within the city radius, which means Washington produces more resources.

INCREASING YOUR POPULATION & EXPLORING

Find the square on which she's working. The default placement of new workers isn't always in line with your intentions. For instance, *CIVNET* assumes you want Washington to grow fast, so it chooses an assignment that generates food. The default placement for your new worker is on a River square, where she can produce two wheat and one shield. Is that the best she can do? *Click on the River square to pick her up, and then again on the Forest square (just west of the Jungle with the Gems).* A worker in *this* square produces one wheat and two shields. The food assures that Washington continues to grow, and the added shields make your Phalanx appear that much sooner.

In a couple more turns, your Phalanx is completed. *Clear the message, then open the CITY DISPLAY. Click on the MILITARY button to bring up the UNIT ROSTER. Click once on the old Militia unit to activate it.* You're going to fortify the Phalanx in the city, so this Militia is available for exploring. *Now, click the PRODUCTION button to switch to the PRODUCTION box, and change Washington's project to a Settlers unit.* Now that the city defenses are in place, *click on the Forest to pick up the citizen working there. Click on the River square north of the Forest.* As you've seen, a citizen working this square produces no shields, but does generate more wheat and an extra double arrow. *Move the Militia northwest one square, then fortify the Phalanx in Washington.*

The Militia is your only mobile unit at the moment, so continue moving it northwest. Soon, your researchers report their success with the Wheel. *Assign them to study ALPHABET next.* In a couple of turns, your Militia unit spots a minor tribe (that little grass hut sitting on a terrain square). *Save the game by choosing the SAVE GAME option in the GAME menu, or pressing* Ctrl S . Why save? You're going to contact the minor tribe (by moving your unit into the square), and their mood is not always predictable. If you don't like what happens, you can always quit, reload the saved game, and try again. Some people like the safety net a saved game provides, and others consider it cheating. It's your choice.

For the purpose of the tutorial, you should save and restart if you anger the minor tribe, and Barbarians set upon you. The other possible outcomes include learning a new civilization advance, gaining a new unit or even a new city, or, perhaps the most likely, gaining 50 coins for your treasury. Our instructions assume you got the 50 coins.

Now move your unit northwest until it reaches the sea, and then follow the western coast of the continent northward (okay, sometimes you'll be heading northeast, and sometimes east—just follow the coastline). Something like eight turns later, your wise men discover the Alphabet. This discovery doesn't allow you to build anything new, but it makes other research possible. *Choose WRITING as their next project since that discovery allows you to build Diplomat units. Now, continue exploring until Washington finishes the Settlers.*

Sometime during all those turns, Washington gained another citizen on the Population roster, making three in all. When you complete the Settlers unit, the city population falls back to two icons. This is because one of those citizen icons, representing a hardy band of folk, agrees to pull up stakes and become the Settlers. The new unit also consumes one wheat of Washington's food production every turn. *Move the Settlers due north, then change the production project to a Chariot unit.* Chariot units aren't strong on defense, but they're great for exploration.

Next turn, continue moving your Settlers north and west; their goal is the northern coast, where the Militia has found a profitable city site—three Grassland squares with shield markers on them. (In the TERRAIN CHART, you'll notice there's a fifty percent chance that a Grassland square might produce increased resources. Those extra-productive squares are marked with a green shield). *The Militia unit should continue tracing the coastline east.* It becomes clear pretty quickly that your continent does not spread very far to the north.

Soon, your wise men report the discovery of Writing. *Set them to work on CODE OF LAWS right away. Open the CITY DISPLAY and change Washington's production to a Diplomat.* Chariot units are less useful on small land masses, and Diplomats are extremely helpful when you meet other civilizations, as is inevitable. Eventually, you'll come across another minor tribe. *Save the game again, then walk right in.* For the purposes of this tutorial, you should save and restart if you encounter Barbarians.

Continue until your Settlers reach the southernmost of the Grassland squares with shield markers. Build your second city there. (Name it what you will, but we'll call it New York.) Right away, change the production for New York to a Phalanx unit. Defense is more important than growth right now, so *on the CITY MAP, assign your worker to one of the Forest squares to the south.* This cuts your wheat surplus, but maximizes your production. *While you're at the CITY DISPLAY, use one of the arrows at the bottom to check on Washington.* The Diplomat is almost half finished.

A few turns more exploring, and the research on Code of Laws is complete. *Order your researchers to begin looking into CURRENCY next. Continue tracing the coast with your Militia. When New York's Phalanx is completed, fortify it in the city. Rather than churning out Phalanx units constantly, open the CITY DISPLAY for New York and change production to a Settlers unit. Now, move the worker from the Forest square to one of the Grasslands north of the city.* This will increase your food production and decrease your shields. Thus, the city will grow before the Settlers unit is produced, so that producing the unit will not uproot the city.

Continue exploring with the Militia for another few turns, and your Diplomat is complete. Leave Washington's production on Diplomat for now. You're going to be exploring with the one you have, and that's risky. Beside, Diplomat units don't cost anything for your city to maintain, and most other units do.

Use your Diplomat unit to help the Militia explore the rest of your home continent. Soon, your scientists present you with the secret of Currency. This discovery makes it possible for you to build Courthouses and Marketplaces in your cities. *Your researchers' next project should be* Trade.

Pretty soon, you will have explored the entirety of your little continent. You could disband the exploring units at this point, but that would not be wise. *Move the Diplomat unit to the southwestern corner of the land mass, then set it on sentry* (S) *there. If barbarians or rival units sail by or land, your Diplomat will wake up. Use the* Sentry *order since the Diplomat has no defensive strength. Similarly, post the Militia on the tiny spit of Grassland three squares east and one north of Washington, to watch the harbor.* Fortify the Militia unit to take advantage of the defense bonus. Before he can get there, you'll discover Trade. *Next, research* Mapmaking. Since you're on an island, you need ships. The ability to make maps allows you to build Trireme units.

SEARCHING FOR NEIGHBORS

As soon as you have assigned the scientists their task, change the production in Washington from the Diplomat in progress to a Caravan. When you do contact another civilization, you can profit from the situation by setting up a trade route right away. You'll need to have a Caravan unit ready ahead of time.

When New York's Settlers unit is done, you're going to make some improvements in the land around that city. First, change New York's production to Library. This, again, is to save up shields. What we really want, as soon as the research is complete, is an instant Trireme. *Move the Settlers north one square. Press* R *or select the* Build Road *option on the* Orders *menu. When the road is complete, press* I *(or select* Irrigate *from the* Orders *menu) to irrigate the same square.* This takes much longer than building the road did.

Open the City Display *for New York.* Notice that the terrain square with the road built on it now produces one double arrow that it did not before. Also, the city has grown again, so you need to check the assignments of the new workers. *Make sure that one citizen is working on each of the Grasslands with shield markers. While you're at it, this would be a good time to check on Washington.* Production and growth are proceeding well, but you could be getting more science out of the terrain. How? *Move a worker from one of the less productive River squares (those producing two wheat and one double arrow) to the Jungle with the Gems.* Now you have two more double arrows (lightbulbs, for the moment) but one fewer wheat icon per turn. There's still a surplus of food, and your discoveries will come that much faster.

End your turn a few times, and the handsome guy in the toga brings you *Flagmaking. Choose whatever advance you prefer at this point. For the purposes of the tutorial, you have* everything you'll need. *Change the production in New York to a Trireme. This ship* will take a few turns to produce. While you're waiting, assign your *Settlers unit* to start building a road between New York and Washington by *choosing the CREATE SMART SETTLERS option from the ORDERS menu, and selecting the Inter-Intercity HIGHWAY option. Since you only have one other city, Washington is your only choice right now. Highlight Washington and click OK.* As your civilization grows, you'll see a list of each city you've built.

When your Caravan is complete, start moving it west toward the square north of your Diplomat. You'll want to be able to load both units onto the Trireme when it arrives, but if they're both on the same square, any roving Barbarian unit can wipe both out in one attack. Probably the Caravan will arrive at the coast before the Trireme does; you can either Sentry or Fortify it, as you wish. *Change the production in Washington to another Settlers unit.*

When your Trireme is at last seaworthy, send it down the coast to pick up your Diplomat and Caravan. (You can choose what you want New York to produce next.) *Stay right next to the coast, since Triremes tend to disappear when they lose contact with land. As the ship heaves into range, move the cursor over the sentried Diplomat. When the cursor becomes the INFORMATION CURSOR (the circle with the letter 'I' inside), click once.* In the box that appears, click on the unit icon to reactivate that unit, then on OK. Repeat this to activate the Caravan. *Now, have each unit just walk right onto the ship.* A Trireme can carry two units, so the holds are full.

Position the ship adjacent to the southwestern corner of the continent, then use the Spacebar to eat up any remaining movement points it might have. To avoid losing your Trireme, you must be careful when exploring for nearby continents. If you go too far, you lose both the ship and its cargo. In fact, most of the time you might want to explore with an empty Trireme. For the tutorial, we know you can make it, so taking along some units saves time. *Next turn, move your ship southwest.*

You've found another continent. Now, *click on the Trireme. Reactivate both of the units in the same way as you did when you loaded them, then move them onto the new land mass. While they begin exploring to the west and north, send your ship back to pick up the Settlers unit that Washington is producing.* If this new land isn't already populated, it's yours to settle.

As your exploring units move around, you'll begin to see the unmistakeable signs of another civilization: Depending on your rival civilizations' victories, you might find the English city of London, or just a few irrigated squares and roads. If London exists, you can trade and establish an embassy with the English. If the city has been wiped out, you'll need to continue exploring north until you encounter the Mongols. Whether the English exist or not, you'll need more space than your starting continent has, so send the Trireme home to pick up the Settlers anyway.

Whether you meet the English or the Mongols, their leader's attitude toward you and the number and dress of the advisors behind the ruler tell you a lot about the relative strengths of their civilization compared to yours. For details, read the **Diplomacy** chapter of this manual.

You can exchange knowledge with your new contact if you wish, but be aware that you are probably more advanced than either culture. They'll get the better end of the deal. Accept a peace treaty and do not demand tribute (they won't give any this early, anyway). If the English aren't around, the territory you first explored is likely to be empty, and you can establish a beachhead. Near where you first landed on this continent, there is a Grassland square with a shield on it, surrounded by a Swamp to the north, a Forest to the west, and Jungles south and east. *Build a city on that Grassland (Boston).* The odd terrain gives units stationed near the city some defensive benefit, and the Forest squares' production should help you build things quickly. *Make sure the population is assigned to work one of the forests, then start in on a Phalanx right away.* (If the English are there, explore south to find a good place to settle).

Sooner or later, Washington is going to complete another Settlers unit. When it does, *change its production to whatever you like; this tutorial's almost over. Move the Settlers onto the Gem in the Jungle and begin mining. When New York finishes its Trireme, change the production there, too. Use the ship for exploration; there are five more civilizations out there that you haven't found.*

If you can't find London, the Mongols' capital city, Samarkand, is likely to be north and slightly west of your landing point. Be sure to explore along rivers; your AI opponents often set up cities on the riverbanks. When you find Samarkand, move both your Diplomat and Caravan units into the city as soon as you can.

The Diplomat has several options when entering a new city. Today, we're going to establish an embassy. *Click on that option, then on OK. After you clear the message box, you can view the* INTELLIGENCE REPORT *on whichever empire you have found.* The summary is a useful overview, and *clicking on the* REPORT *button gets you the details,* including all the technological advances they've discovered. We told you you were ahead of them.

Move your Caravan unit into the rival capital to immediately set up a trade route. Whatever revenue is announced in the ensuing message box (the amount depends on distance and a few other things) is instantly credited to your treasury. *Open the* CITY DISPLAY *for Washington.* In the GENERAL INFORMATION window, you see the rundown on the trade route with London or Samarkand. This route generates one double arrow every game turn. That's a double arrow you can use for income or science, depending on how you have Washington set up. Right now, it's adding a lightbulb.

That's as far as this tutorial goes. Now that you're familiar with a small part of the tutorial world, feel free to go out and conquer the whole thing on your own. It's a typical randomly generated world, and you've been playing on Chieftain level—the least challenging. When you're ready, use the RETIRE option on the GAME menu to stop this game, then start up your own civilization.

MAKING CONTACT

Units You Can Send Out

The units you can build in a city stem from the advances you have discovered. If you played through the Tutorial, we introduced you to a number of easy-to-get early units. If you didn't, or if you'd like a reminder, here's a short synopsis.

When you begin the game, Militia might be the only military units you can build. If you research Bronze Working, you can build Phalanxes, which are decent defensive units for the beginning of the game. If you research The Wheel, you can build Chariots, which are great offensive units, and which move at twice the speed of foot soldiers like Militia and Phalanxes. If your continent is large, Chariots are great units with which to explore.

If your continent is small, on the other hand, or if you can see the shores of other continents across a narrow strait of water, you might want to research Mapmaking, which allows you to build Triremes. These ocean-going ships are not particularly seaworthy. It is imperative that they end their movement next to shore (or there's a strong chance they'll sink). However, they do offer an early start to sea trading and the ability to ferry other units to other lands.

If you have lots of neighbors, or if you're interested in trade rather than war, you'll want to research Writing early on. Once you've discovered this advance, you can build (or commission) Diplomat units. Diplomats travel at twice the speed of foot soldiers. They also have the ability to move next to and past enemy units (see **Terrain & Movement** for the complete rules about zones of control, and why Diplomat units can ignore them). Of course, being Diplomats, these units are not useful for attack or defense. They *are*, however, good at spying and carrying messages.
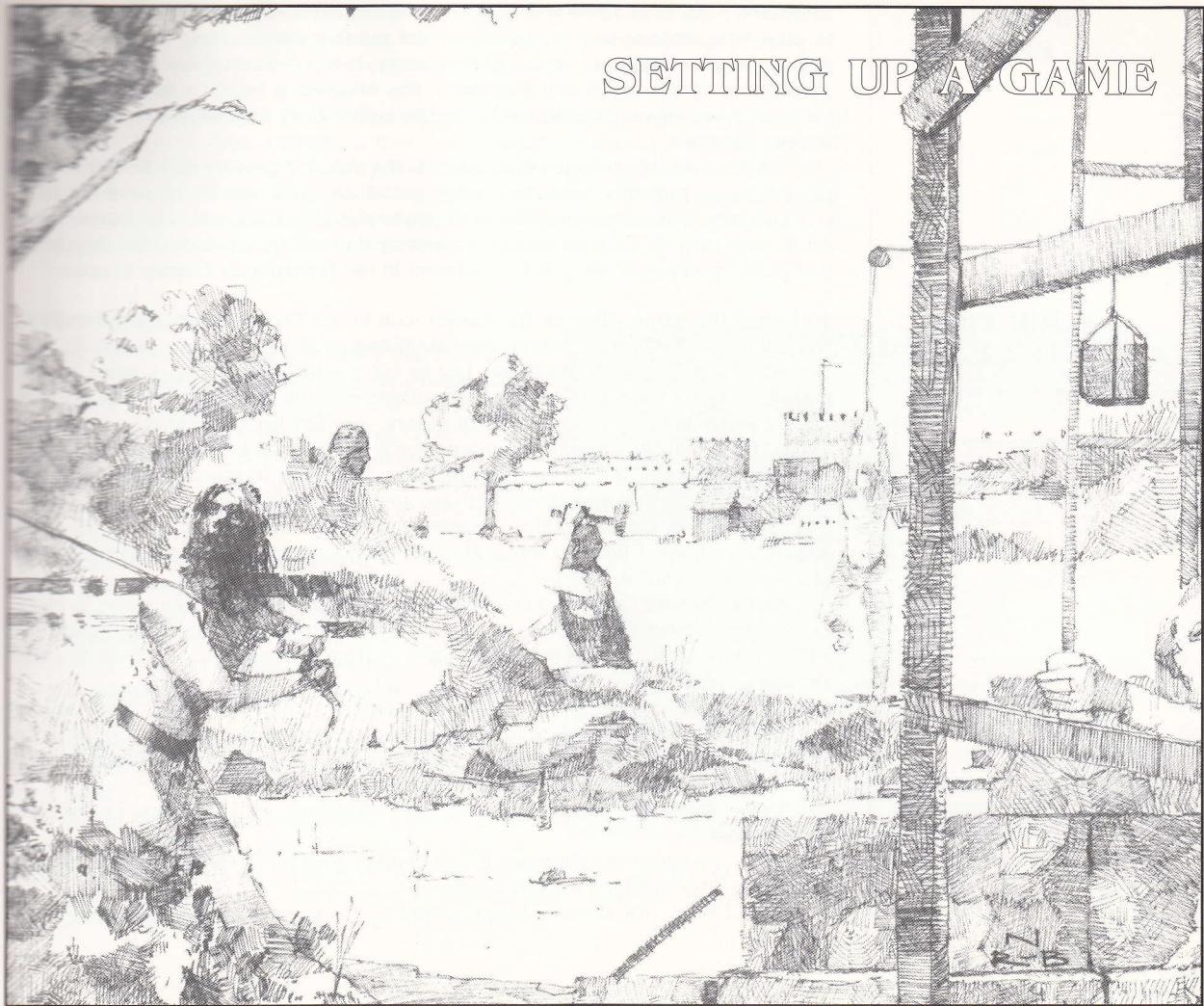
YOUR FIRST DECISION

Beginning a game of *CivNet* means choosing the circumstances in which you want to play. Your options include specifying the number and location (modem, net or AI) of your opponents and manipulating the environmental and physical parameters of the world you'll explore. The originating player actually clicks the buttons to set these choices, but he or she is free to accept suggestions from any remote players.

Since setting up a single-player game is the simplest (and familiar to *Civilization* players from previous versions), we'll use it to illustrate the general method. Occasionally, comments apply to multi-player situations, because multiplayer game setup goes through a lot of the same steps as single player. You can find the details that make multiplayer game setup different in the **Multiplayer Games** chapter.

To launch the game, click on the *CivNet* icon in the *CivNet* group. After the game has initialized itself, the opening animation begins (if you chose to install it). You can wait for it to end or press any key to cut it short. Setting up a game means making easy decisions on a series of options screens. At the first of these, you decide whether to play alone or with others. The full list of options is described below. Once you've chosen an option, you'll need to click OK to continue. Note that you can press one of the shortcut keys (indicated in parentheses) while the opening is rolling to immediately activate any of these options.

Start a New Game (S): Play a single-player game; the computer leads all of the other civilizations. Choosing this option means going through the pre-game options screens, as we explain below.

Load a Saved Game (L): Load and continue a previously saved game. A dialog box lists all of the saved games available in this directory. Choose the game you wish to load. You can switch directories to find games you've saved in other locations.

Multiplayer Game (M): Begin or continue a multiplayer game. Your options include head-to-head modem or null-modem games, local network or internet games, or hotseat games, in which several people take turns at the same computer. We've explained the particulars under **Multiplayer Games**.

View Hall of Fame (V): See the standings of previous conquerors and despots.

Quit (Q): Return to Windows if you change your mind (or when you return to this menu after finishing a game session).

Select START NEW GAME to begin setting up for a single-player game, then click OK to go on.

If you're already familiar with *Civilization*, setting up a single-user game is a piece of cake. The pre-game options you have are essentially the same as they were in the Windows, Macintosh and DOS versions, though the graphics might look a little different.

If you've never played *Civilization*, relax—we'll talk you through your choices.

These option screens progress from whole-world effects down to the name of your tribal leader. If at any point you realize that you'd like to reset an earlier parameter (you suddenly wonder what a jungle planet would be like, but you're past that screen), you can use the Go Back buttons located on each screen to "turn back the pages" to any previous screen, then make another choice.

Difficulty Levels

Choose the level of difficulty at which you (and your opponents) wish to play when starting a new game. A number of factors are adjusted at each level, including the general contentment of citizens, the average number of barbarian units encountered in a surprise attack, the pace of technological advancement, and the default turn at which the game ends.

Chieftain: This easiest level is recommended for first-time players. The program provides advice when each player must make decisions.

Warlord: Civilization advances take longer to acquire at this level of play. Warlord level best suits the occasional player who doesn't want too difficult a test.

Prince: At this difficulty level, advances come much more slowly. You need some experience and skill to win.

King: Experienced and skilled players often play at this level, where the slow pace of advancement and the unstable attitude of citizens presents a significant challenge.

Emperor: This most difficult level is only for those who feel the need to be humbled. This level can be won, but not consistently.
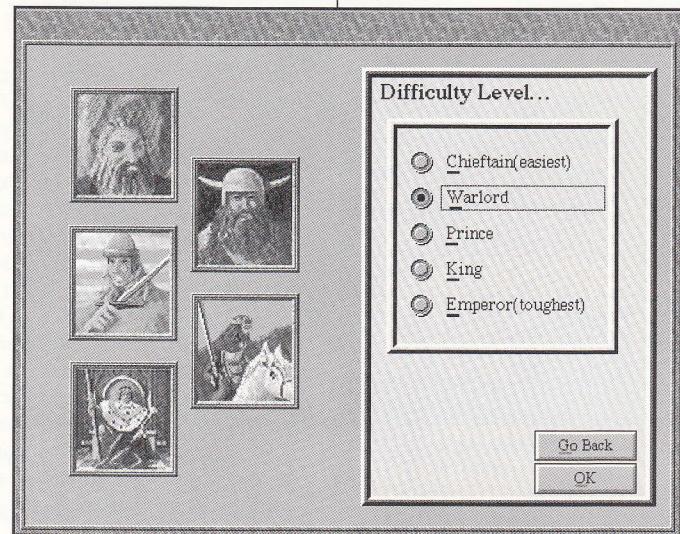
Choose the degree of challenge you want to face on the Difficulty Levels Screen.

Level Of Competition

Choose between three and seven civilizations in the world. More opponents is not necessarily more dangerous, although more opponents means earlier contact and an increased risk of war. Of course, contact with other civilizations also offers opportunities for trade, alliances, and the rewards of spoils of war when you emerge victorious. The fewer your opponents, the more time you have to peaceably expand and develop before encountering rivals. Barbarians are a factor in either situation, and do not count as a rival civilization.

Your civilization counts as one of the cultures, so if you choose a world with three civilizations, you only face two rivals. Seven players (you and six others) is the maximum number for any *CivNet* game.

Set Up the World

The world on which you play can change your strategies and play balance. *CivNet* gives you several options. Choose PLAY ON EARTH if you want to use a map based on Earth's continents and geography. The GENERATE NEW WORLD option tells the game to randomly create a map. You can use the CUSTOMIZE button to specify the parameters listed at the left of the box: Land Mass, Temperature, Climate, and Age. Finally, if you have used the map generation tool to create your own world (see **Customizing Maps** for the full treatment), choose the LOAD CUSTOMIZED MAP option to access your handiwork.

When you click the CUSTOMIZE button, you'll see a grid of pictures which represent your options. Each parameter has three conditions: for example, the Land Mass conditions are small landmasses (and lots of ocean in between), normal landmass to ocean ratio, or large landmasses (extensive continents with lots of landbridges and isthmuses). The row label on the right indicates the highlighted condition for each parameter. Click on a picture to highlight it. When you like the set of parameters you've chosen, click the OK button to return to the SET UP screen. If you change your mind, you have two options. Click the DEFAULT button to return all the conditions to their original settings. Click the GO BACK button to reset the conditions and return to the previous screen.

Select a Play Method

If you choose the TURN BASED MOVEMENT option, each player completes his or her moves one at a time, and the turn ends when all players' movements and decisions are completed. In a net game, if one or more players are meticulous in considering all their options, or in the later "years" of the game, when civilizations can be vast and complex, this could mean a considerable wait between turns.

If you choose the SIMULTANEOUS MOVEMENT option, your movements and decisions happen simultaneously, in "real time," with all of your opponents' moves. When everyone is finished, the turn ends. Net game players have shorter waits with this option (perhaps none at all), but rival units might attack your forces in the middle of your scheming. The game notifies you if you are the last player to finish moving.

Choose Your Tribe...

Select the color you want your units and cities to be by clicking on a color bar. Then select the name of your tribe from the options available, or click on the Custom button to type in any name you wish whose name is less than 31 letters (and spaces) long. The computer adds a final "s" to any designation such as "Scot," or "Democrat," so that the game text reads correctly; it does not change words like "Javanese." When you're satisfied with your choice, click OK. Your civilization is known hereafter by this name. When you select a custom tribe, you must create a custom portrait of your leader as well (the KING EDITOR appears before you **Choose Your Name**..., below).

The location of your first unit and the proximity of your rivals is determined randomly, except that on Earth, each tribe chosen starts near its historic locale.

If you are joining a game already in progress, the CHOOSE YOUR TRIBE... screen offers a synopsis of each available tribe's situation to make your decision a little easier. The color bar lists not only the tribe's name, but also its current population, and the number of cities it has built. The icon in the central column gives a relative measure of the distance to a rival culture: A civilization with a dim icon is far from other tribes, but a civilization with a bright icon has neighbors close by. The bars of icons in the right column give a relative picture of each civilization's number of units (legions), current wealth (coins), and current advances (lighbulbs) in comparison with each other. (No information is available about the civilizations other players have already chosen.) Select the civilization you're most interested in playing by clicking on the color bar. You can customize the tribe name just as you did above.
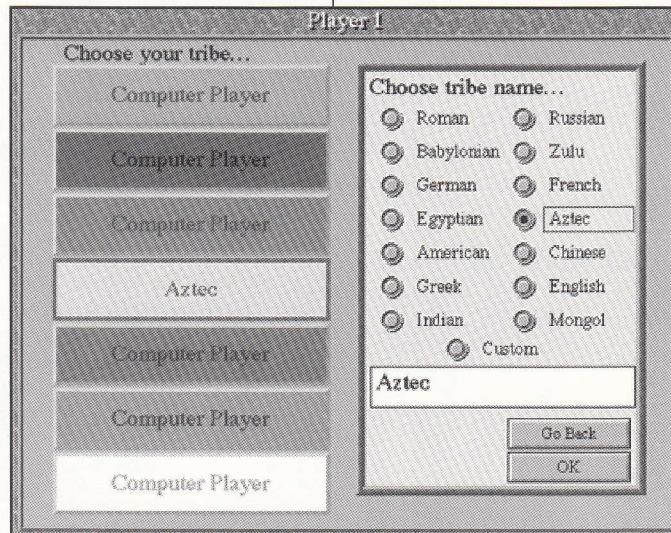
You can choose any combination of tribe "color" and name.

Choose Your Name...

You have the option of playing either a male or female ruler. *CivNet* suggests a name. You can either accept this appellation, or change it to something suitably impressive. Your ruler's name should be no longer than 31 letters (and spaces).

If you chose a custom tribe (see **Choose Your Tribe**...), you must create a custom portrait that appears to your rivals when they seek an audience with you. In the King Editor, choose what gender you want your picture to be by clicking either the King or the Queen button. Use the arrow buttons to adjust your race, headgear, clothing, and the object you're holding in your arm. Click the checkbox to turn off any option you're not interested in (clicking the headgear checkbox leaves you bald, for example).

The buttons across the bottom of the King Editor allow you to save the portrait you create (click Save), call up a previously saved portrait (click Open), restore the picture to the default image (click Reset), or return to the previous screen (click Cancel).

READY, SET, GO

After you are satisfied with your settings, click OK to start the clock ticking on your civilization. A screen pops up welcoming you to your position as leader and detailing the accomplishments of your culture thus far. If you are restarting a saved game, this screen congratulates you for seizing control from the previous leader (which might or might not have been you). Again, a quick summary details your culture's accomplishments to date. When you have finished reading the screen, press any key or click the OK button on the screen to go on to the game.
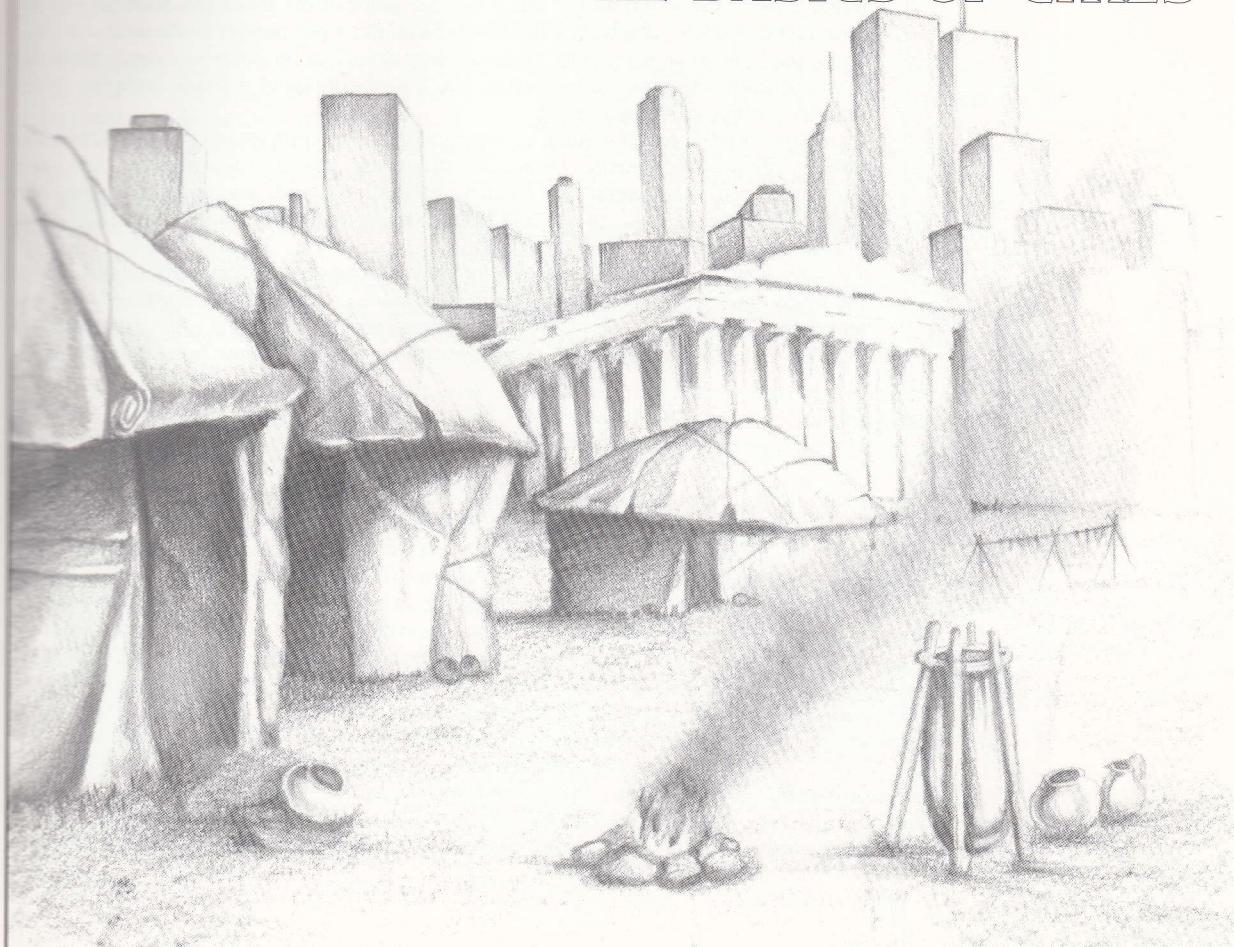
When you start a game of *CivNet*, your Settlers unit stands on a square of terrain surrounded by the darkness of the unknown. Though you can choose to let this single group of Settlers (if you're really special, you could possibly have *two* Settlers units) wander the world alone, that's not the point of the game. As soon as you've found a decent site, you want your Settlers to build a permanent settlement—a city. You *must* build at least one city, because only cities can produce new units, allowing your civilization to grow and develop. You'll probably build a dozen or more cities over the course of the game.

Cities are the residences of your population, the sources of tax dollars, and the homes of your scientists. Each city organizes the development of the area surrounding it, harvesting the nearby agricultural land, natural resources, and potential trade goods, then converting these resources into food, industrial production, technology, and cash.

One way to measure the success of your civilization is by the number and size of the cities you have built or captured. Larger cities collect more taxes, conduct more technological research, and produce new items faster. Civilizations with small numbers of cities and small city sizes risk being overrun by larger and more powerful neighbors.

CITY CONCEPTS

To comprehend the CITY DISPLAY in CivNet, you must understand the symbolism the game uses to represent the concepts relevant to population growth and urban dynamics. Take a look at the CITY DISPLAY while you're reading—it'll make things a lot clearer.

Cities arose when stationary populations banded together to produce not only enough food to feed themselves day to day, but sufficient leftovers to store for later use. Once food storage developed, not every citizen had to produce food all day, and some people specialized in producing other goods. Eventually, cities accumulated enough surplus food and goods that they could trade their excess with nearby populations.

To represent the accumulated population in a game city, CivNet maintains a POPULATION ROSTER in the CITY DISPLAY. Each citizen *icon*—a small person symbol—stands for a segment of that city's population (the exact number of people he or she represents changes as the city grows). The roster displays both citizens who work the land around the city and citizens whose specializations produce other effects. The POPULATION ROSTER tells you more than just how large your city has grown (you'll find lots more details under **Population Roster** in **Reference: Screen by Screen**), but there are other points of interest in this display, so we're moving on.

Other icons in the CITY DISPLAY represent a city's production of food, raw materials, and trade. We're going to call these materials the *resources* of the city. Production is linked to terrain in the game, just as it is in the real world (deserts are not the best food-producing areas in either case). A full discussion of the types of terrain available in CivNet and their resources is outside the scope of this chapter (you'll find it under **Terrain & Movement**). For now, you need to know that citizens working on terrain squares (or "map squares") can produce three different types of icon: *wheat,* which represent food; *shields,* which represent raw materials the city can use to produce goods; and *double arrows,* which represent trade with other populations. On some terrain squares, workers produce a larger proportion of one icon than of the others. On some squares, workers can't produce any of one type of icon (a citizen working on Tundra produces no shields, for instance).

The resource icons—wheat, shields, and double arrows—that appear on the map are recapitulated in other displays, where they reveal further details of your city's economy and growth. We'll explain all the details in the reference sections that describe those displays.

GAINING NEW CITIES

You can acquire new cities in three ways. Most frequently, you build them with Settlers units. If you are aggressive, you can conquer the cities of your neighbors. Occasionally, you can gain a city when a minor tribe discovered by your units elects to join your civilization.

Founding New Cities

The most common way to gain new cities is to send out Settlers to tame the wilderness. In fact, you start the game with a Settlers unit whose primary task is to found your first city. The terrain under and around your city is important, so if you want to select the best possible place for your metropolis, skip down to **Choosing Your Location**. If you want to jump right in, choose a square with Rivers, Plains and/or Grasslands near it.

When your active Settlers unit stands on the map square where you wish to build a new city, choose the option FOUND NEW CITY from the ORDERS menu or press the B key. If you accidentally build a city by mistake, you can select the CANCEL button on the NAME CITY screen to retrieve your Settlers unit.

Your advisors propose a name for the new city; you can type in a different name if you prefer something else. When you are satisfied with the name, press Enter or click the OK button. The CITY DISPLAY opens so that you can arrange the city's initial production and economic development. When the display closes, your new city appears on the map. The Settlers unit disappears, having converted into the first citizens of your new city.

Choosing Your Location

When building a new city, carefully plan where you place it. Citizens can work the terrain surrounding the city square for two squares in all directions except diagonally (see **City Map** for a diagram showing the exact dimensions). This area is called the *city radius* (the terrain square on which the Settlers were standing becomes the *city square*). The natural resources available where a population settles affect their ability to produce food and goods. Cities built on or near water sources can irrigate to increase their crop yields, and cities near mineral outcroppings can mine for raw materials. On the other hand, cities surrounded by desert are always handicapped by the aridness of their terrain, and cities encircled by mountains find arable cropland at a premium.

In addition to the economic potential within the city radius, you need to consider the proximity of other cities and the strategic value of a location. Ideally, you want to locate cities in areas that offer a combination of benefits: food for population growth, raw materials for production, and river or coastal areas for trade. Where possible, take advantage of the presence of special terrain squares (see **Terrain & Movement** for details on their benefits).

Proximity Of Cities

Another consideration when planning new cities is the current or potential location of other cities. You want to minimize the chance that one city's radius overlaps another's. Since a map square can only be used by one city at a time, radius overlap restricts the potential growth of one or both cities. Explore nearby lands as soon as possible to begin planning the placement of future cities: You want to take best advantage of the terrain. Of course, the geography of your particular continent will limit your choices. If you find yourself on a small island, your potential city sites will be necessarily more crowded than if you can sprawl across a vast continent.

Strategic Value

The strategic value of a city site is a final consideration. A city square's underlying terrain can increase any defender's strength when that city comes under attack. In some circumstances, the defensive value of a particular city's terrain might be more important than the economic value; consider the case where a continent narrows to a bottleneck and a rival holds the other side. Good defensive terrain (Hill, Mountain, and Jungle) is generally poor for food production and inhibits the early growth of a city. If you need to compromise between growth and defense, build the city on a River square if possible. This yields decent food production and is better than Plain or Grassland for defense.

Regardless of where a city is built, the city square is easier to defend than the same unimproved terrain. In a city you can build the City Walls improvement, which triples the defense factors of military units stationed there. Also, units defending a city square are destroyed one at a time if they lose. Outside of cities, all units stacked together are destroyed when any military unit in the stack is defeated (units in Fortresses are the only exception: see **Fortresses**).

Placing some cities on the seacoast gives you access to the ocean. You can launch ship units to explore the world and to transport your units overseas. With few coastal cities, your sea power is inhibited.

Capturing Cities

Other civilizations normally defend their cities with one or more military units (*armies* for short), and sometimes with the city improvement City Walls. A defended city has a black outline. A walled city has a thick, gray outline. There are two ways to acquire enemy cities: force and subversion. If you choose force, you must destroy the defenders by successfully attacking with your military units. Once the city is undefended, you can move a friendly army into the city and capture it. If you prefer subversion, you must successfully bribe dissidents in the city with your Diplomat unit (and sufficient funds—see **Diplomats** for all the details on such espionage). The dissidents capture the city for you, as their armies automatically convert to your side. Once captured, the city becomes yours to control and manage as you would any other.

Capturing an enemy city can also lead to side benefits, such as the discovery of a new technological advance and plundered cash to add to your coffers. Capture, however, eliminates one point of population (unless the City Walls, which can prevent this loss, are still standing). Therefore, when your units enter a city with only one point of population remaining, it is destroyed instead of captured. Diplomats can incite dissidents (see **Diplomats**) to capture a city without reducing its population below one.

Occupation of an enemy city destroys roughly half of the improvements the city has built, including all Temples and Cathedrals. Certain military units, such as Fighters and Bombers, are also destroyed rather than captured. Capture does not affect Wonders of the World (though, of course, destroying a city does—see **Wonders of the World** for more details). Inciting revolt creates less damage to the city, as the dissidents rely less on bombardment, and their familiarity allows them to pinpoint targets more accurately. A city captured by revolt loses only the Temple and Cathedral improvements (if it had them).

Converting Minor Tribes

As your units explore the world, they might encounter the huts of *minor tribes*—civilizations too small or too peripatetic to count as "settled" (see **Minor Tribes** for the skinny on these situations). Minor tribes react to contact with a range of emotions, from delight to hostility. Occasionally, a minor tribe is sufficiently awed by your emissaries to immediately form a new city and become part of your civilization.

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Move your exploring unit onto the minor tribe icon to discover the tribe's attitude towards your civilization. If they choose to form a new city, you need do nothing. Your advisors propose a name for the new city (which you can change if you prefer something else). When you are satisfied with the name, press [Enter] or click the OK button. The CITY DISPLAY opens so that you can arrange the city's initial production and economic development. When you close the display, your new city appears on the map. The minor tribe icon is replaced by the new city square, and members of the tribe settle in as the first citizens of your new city.

The City Square

The terrain a city occupies is especially important because it is always under development. You cannot take workers off of this square when adjusting resource development on the CITY MAP (see **City Map** in **Reference: Screen by Screen**). If this area is not useful, especially for producing food, then population growth in the new city is handicapped. For this reason, you'll find new cities do best when they are built on Plain, Grassland, or River squares. These terrain types provide the best food production and, thus, faster population growth.

Note that all beginning civilizations possess the technologies of building Roads, Mining, and Irrigation. When you found a city on a Plain, Grassland, Hill, or River square, the city square is automatically improved by roads and irrigation. When you found a city on any other type of terrain, the city square is automatically improved by roads. You cannot assign a Settlers unit to further improve a city square by, for example, adding mining or railroads, regardless of terrain.

The City Radius

The potential area of development extends two map squares out from a city in every direction except diagonally; it extends only one square diagonally. If the city grows large enough, its citizens can bring all of this area into development. When planning a new city, consider the long-term benefits of all the terrain squares within this radius.

THE PARTS OF A CITY
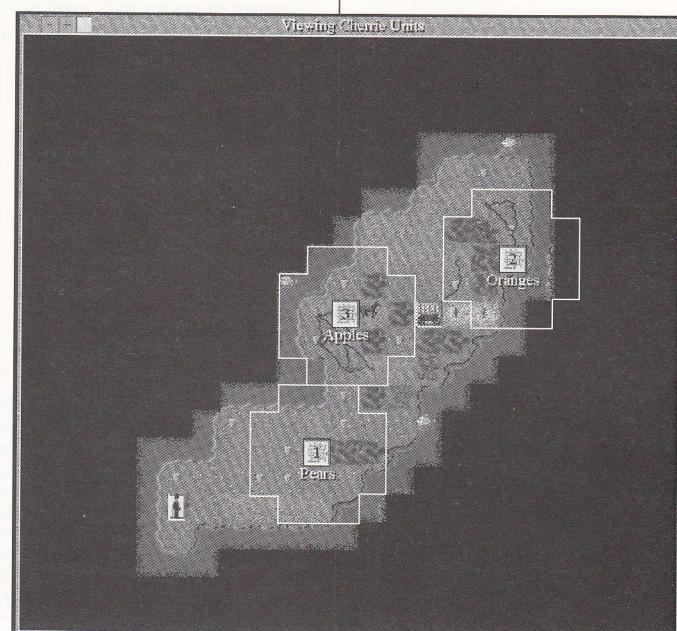
You will learn to visualize the city radius surrounding each of your city squares.

For the city's population to increase, the radius must encompass terrain that workers can cultivate to produce food. Your (potentially) most important cities also have raw materials available. These cities can quickly build and support military units and Wonders. Hills and Forests allow your citizens to produce good quantities of raw materials, as do squares containing special terrain icons (deer, horses, coal, fish, and others—see **Special Terrains** for complete details).

The importance of trade in generating taxes and civilization advances makes River squares especially good sites for cities early in the game. Where you have no Rivers or coastal areas, you can generate trade by building roads on Plains or Grasslands.

When a square within your city radius is outlined in red, it indicates that another city is claiming that terrain's resource production. It could be one of your cities, if the city radii overlap. If you own both cities, you can flip between city maps to adjust production in each to the best benefit of both locations. It could also be a rival city that one of your opponents has built close to you. Finding an outlined square in your city's radius might even lead you to discover a rival city in unrevealed territory or outside of your units' observation range.

Once you've founded, captured, or gained a city, you need to direct its growth and production. Each city has different assets and demands, so each should be managed individually. You must keep several goals in mind when managing a city: maintaining population growth, maximizing a useful mix of economic development (food, raw materials, and trade), producing tax revenue, producing technological research, and producing useful units and improvements, all the while maintaining an attitude of contentment and thereby avoiding civil disorder. For cities to grow and prosper, they need to balance economic output with the citizens' needs for infrastructure and services.

CITY MANAGEMENT CONCEPTS

As your city increases in size, its population expands, and it produces more and more wheat, shields, and double arrows. As we said in **City Concepts**, these icons represent your city's food production, raw materials, and trade. In city management, you add another layer of concepts which address how you turn these materials into products you can use. Refer to the CITY DISPLAY as you read.

Wheat feeds your population and supports the city's units. When a city produces more food than its population and units consume each turn, the excess wheat accumulates in the FOOD STORAGE box. When the box is full, another citizen is added to the POPULATION ROSTER, and the city increases in size. If your city is not producing enough food each turn to feed its population, wheat is removed from the FOOD STORAGE box. If the box empties, any units that require wheat for support are disbanded, one by one, until a balance is achieved. If your city still experiences a shortfall, one citizen is removed from the POPULATION ROSTER, and your city decreases in size.

Shields power your industrial capacity and support the city's units. When a city produces more shields than your units expend each turn, the excess shields accumulate in the PRODUCTION box each turn. When the PRODUCTION box is full, your city produces something. It can "build" one of three kinds of things: units which move around the map (like Settlers and Chariots), city improvements which are tied to specific cities (like Libraries and Aqueducts), and *Wonders of the World,* which give unique benefits to the civilization that builds them (like the Pyramids or Magellan's Expedition)—but more about these details later. If your city runs short of the raw materials it requires each turn, one or more units (that it supports) are forced to disband. The units farthest from home are disbanded first.

Double arrows are further divided into three commodities that your civilization acquires: *luxuries, cash,* and *scientific knowledge.* These commodities each have their own icons: Luxuries are represented by bluish diamonds, cash is represented by gold coins, and science or research is represented by lightbulbs. The type of government your people develop and the distance remote cities are located from your palace affects your trade income. Sometimes trade can be lost to corruption, in which case a proportion of your double arrow icons are shadowed. You can read all about the details of trade transactions under **Trade Management Concepts**.

Keeping a city's population growing is important because each additional citizen contributes something to your civilization. Each new citizen brings a new terrain square under production on your CITY MAP until there are no empty squares to work. After this point, each new citizen becomes an Entertainer (see **Specialists** for details on what Entertainers do). Thus, population growth increases your economic power, and concurrently, the strength of your civilization. The size of your population is a major factor in determining your civilization score, and is a measure of how well you have ruled.

The citizens of a city that work the surrounding countryside harness the economic resources within the city's radius. Depending on the needs of your civilization, there might be times when you prefer increased industrial output from a particular city over population growth. At other times, you'll want increased trade revenues. Still other times, sheer population growth might be the most important goal.

You can manipulate the output of a city by reassigning workers on the CITY MAP. Each terrain square that shows resource icons (wheat, shields, and/or double arrows) is being worked by a citizen. Click on that square, and you take the citizen off work. An Entertainer icon (he looks like a little, tiny Elvis in a white jump suit) appears at the end of the POPULATION ROSTER. Now click on an empty terrain square. Elvis disappears from the POPULATION ROSTER, and resources appear in that square, indicating that a citizen is now working there. By experimenting with the placement of workers on the CITY MAP, you can find the optimum production ratio of food to raw materials to trade for that city.

Having an Entertainer on your POPULATION ROSTER might change the attitude of one or more of your citizens. For more information on this reaction, see **Happiness and Civil Disorder**.

Tax Revenue

The percentage of your trade that is converted into tax revenue, or coin icons, is determined by the tax rate you set—see **Trade Rates** for information on how to manipulate the ratios of coins, lightbulbs, and diamonds. Why do you need tax revenue, anyway? You need revenue, or cash, because most improvements you build within cities require a stipend of coins for maintenance. Coins are also useful for speeding industrial production (see **Rush Jobs**), bribing enemy armies or inciting revolts in enemy cities (see **Diplomats**), and for negotiating peace with your neighbors (see **Diplomacy**).

The combined tax revenues of all your cities must exceed their combined maintenance requirements before coins can accumulate in your treasury. It is not necessary for each city to have a positive cash flow. However enough cities must do so to cover your civilizations' expenses, or your treasury will be depleted to cover the deficit. You can watch your STATUS window or check with your TRADE ADVISOR to see if you have a surplus or a deficit, as we'll explain under **Advisors** in **Reference: Screen by Screen**.

Some cities might not be especially suited for industrial production because of terrain or other factors. But they might still be good trading centers, and capable of generating lots of income. Develop these locations with roads (and later, railroads), trade routes (see **Caravans** for the lowdown on trade route bonuses) and Wonders to be your civilization's cash cows.

Technological Research

The greater the research contribution each city makes toward new civilization advances, the faster your people discover each new advance. The science rate you set determines the amount of research done in each city (see **Trade Rates** for the essentials of adjusting the ratios of lightbulb, coin, and diamond icons).

A city's research contribution can be influenced by adjusting the city's total trade income — research (lightbulbs) is a fraction of trade (double arrows) — by creating Scientists (see **Specialists**), and by building certain city improvements. Improvements that can help are the Library and University, which both improve research, and several Wonders. The **Civilization Advance** chapter goes into exhaustive detail about how to read the technology tree, so if you want the nuts and bolts, flip there next.

Industrial Production

Your most valuable cities can be those with the greatest industrial capacity—those whose workers produce the greatest number of shields. These cities can quickly produce expensive military units with which you can extend the power of your civilization. They are also best at producing Wonders of the World, as Wonders generally cost immense numbers of shields. But city management is dynamic. You must regularly monitor the production of your cities to ensure you are building the items you most need.

Several factors influence a city's production of shields: The terrain within your city radius is most important, as citizens working on some types of terrain produce no shields at all (see **Terrain & Movement** for further explanations). You might find it worthwhile to set Settlers to improving the terrain squares within your city radius so that they yield more or different resources (see **Settlers** for examples of what improvements they can make).

Beyond terrain, the form of government your civilization chooses can cause each city to spend some of its raw materials as maintenance for the military units that call the city home. It is possible that you can have so many units drawing raw materials from a city that there are no surplus shields. In a city where this is the case, progress on the item under construction (unit, improvement, or Wonder) stops until the situation is resolved.

A number of strategies allow you to adjust industrial capacity. The simplest is to shift citizens working on the CITY MAP so that they produce more shields (see **Resource Development** for instructions). You can also use Settlers to improve a terrain square within the city radius so that it yields more shield icons. Or, order Settlers units to build a new city (they'll no longer draw support from the city that sponsored them when they've settled their own town). You might also try reassigning units so that they are attached to a different city (see **Homing Units** for the low down on how to do this).

Within each city, you can order the construction of improvements such as a Factory or Hydro Plant that increase shield production (see **City Improvements** in **Reference: Item by Item** or consult the CIVILOPEDIA for the list of possible city improvements. Both sources list the construction and maintenance cost of each improvement, its purpose, and what advance is required to make it available).

CITY PROTECTION

Great economic management of a city is worthless if the city is captured by rivals or barbarians. Therefore, part of your management plan must concern the defense of each city. The minimum city defense is one army, preferably one with a good defense factor. A second defender can provide back-up in case the first is taken out (see **Military Units** for details of combat). An army with a strong attack factor is also useful. This unit can strike at enemies that move adjacent to the city, perhaps destroying them before they can launch an attack. Fortify any armies that you expect to defend a city (choose the FORTIFY option from the ORDERS menu or press the F key) because fortified units gain an increased defense strength—as we'll explain more fully under **Military Units**.

CIV
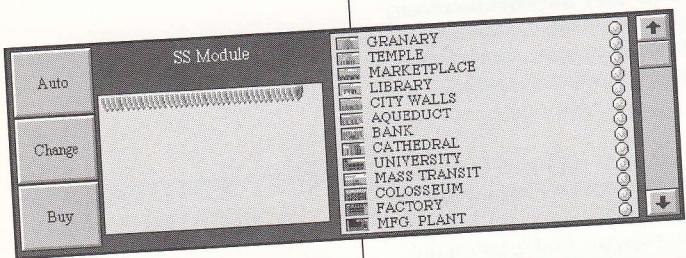
A city's defense can be substantially increased by building City Walls, an improvement that triples any defender's strength against most attackers (although not against Artillery or Bombers). Veteran status and terrain bonuses are figured in before this tripling takes effect. City Walls also prevent population loss when defending units are destroyed (see **Combat**).

When civilization advances make available new army types with better defense factors, take the first opportunity to replace old defenders with better units. Since the offensive capability of your enemies improves as they acquire new advances, your defenses must improve to keep up.

Linking cities with roads and railroads can be very helpful in speeding the movement of units from one end of your empire to trouble spots elsewhere. This puts your defensive armies on "interior lines," allowing them to rapidly move where they are needed.

IMPROVEMENTS

City improvements represent the commercial, bureaucratic, educational, and public works infrastructure that make large and efficient cities possible. In the real world, New York City's dense population depends on the extensive subway system for transportation, and buys electrical power generated by distant grids. Los Angeles is located in a desert and pipes in much of its water from sources hundreds of miles away.

In CivNet, improvements are also critical to the growth and importance of cities. Inadequate provision of these facilities can limit the potential size of a city. Each improvement provides some service or otherwise makes a city work more efficiently. You must choose which improvement to implement at what time—does your city need a Marketplace or a Library more? Would a Courthouse provide more benefit than a Colosseum? City improvements are listed alphabetically in **Reference: Item by Item**, as well as in the CIVILOPEDIA. Both sources explain the building costs, benefits, and upkeep fees of each improvement, along with any conditions which make the improvement obsolete or non-functional.

The PRODUCTION box shows what your city is currently building, and the IMPROVEMENT ROSTER beside it lists the facilities you have already built.

Losing Improvements

Improvements are not invulnerable, nor are they guaranteed to be permanent fixtures in an ever-dynamic city. The Barracks improvement, for instance, has a planned obsolescence: Once your civilization discovers the advance of Gunpowder, your old Barracks is rendered obsolete, and it disappears. (The same result attends your discoveries of Conscription and Combustion. These military installations are sensitive to changes in technology.) To regain its benefits each time, you must rebuild a Barracks improvement in each city you desire to have one.

Most improvements don't disappear over time, but they can be vulnerable to capture, disaster, and sabotage. If you're really strapped for cash, you can even sell a city's improvements.

Capture

Some, all, or none of a city's improvements might be destroyed when it is captured by another civilization. When a city is completely destroyed, all improvements are destroyed as well.

Disaster

Volcanic eruptions, pirate raids, floods, fires, and earthquakes might destroy improvements in a city. There is no defense against earthquakes, but Aqueducts prevent fires, Temples prevent volcanic eruptions, City Walls prevent floods, and Barracks prevent pirate raids. See **Disasters** for the real skinny on these unprovoked catastrophes.

Sabotage

Foreign diplomats can enter one of your cities and attempt industrial sabotage (of course, your diplomats can attempt to sabotage your rivals' cities, too). This might result in the destruction of an existing improvement (or it might scrap the item that city is currently producing—see **Diplomats** for complete details on diplomatic actions). The only defense against this type of attack is destroying the Diplomat before he can enter your city.

Selling Improvements

To raise cash, click on the SELL button (it looks like a gold coin) next to any existing improvement in the IMPROVEMENTS ROSTER of the CITY DISPLAY. A dialog box shows how many coins you could receive for selling the improvement. Normally you can gain one coin per resource invested in construction. If you sell, the improvement disappears from the city and the money is added to your treasury.

Selling improvements can be useful when you are short of money and are threatened with the random sale of an improvement. It can also be useful when you are under attack with no reasonable chance of defending or recovering a city. By selling off its improvements, you reduce its value to the enemy and salvage something. You can sell only one improvement per turn in each city. You cannot sell Wonders of the World.

Rush Jobs

There are also times when you need the specific benefits of an improvement right now, and not 20 turns down the line. If you have sufficient funds, you can rush completion of a partially-built item by paying cold, hard cash. However, speeding construction in this manner costs a premium. When workers are rushed, they receive overtime wages, and must pay surcharges on material delivery and fabrication. The surcharges for a rush job depend on what proportion of the work is already completed, whether the job is civil or military or a Wonder, and can add up to eight times as many coins as the normal accumulation of shield icons.

Items completed by rush jobs are available at the beginning of your next turn, so there is no advantage for rushing items that would complete on the next turn anyway. To judge whether an item can be completed next turn without rushing, compare the surplus raw materials the city is generating to the number needed for completion. For very expensive items, it might be useful to consult your CITY STATUS advisor from the ADVISORS menu for an exact count of the remaining cost.

RENAMING YOUR CITY

You may rename any of your cities whenever you wish. This feature is useful when you capture a city and wish its name to be consistent with the names of cities you have founded, or when you discover that you're confusing units from two cities because the names are too similar.

Open the CITY DISPLAY and then choose the RENAME CITY option from the CITY menu. A dialog box opens where you can type in the new city name. Press Enter or click the OK button to accept the name.

MANAGING YOUR TRADE
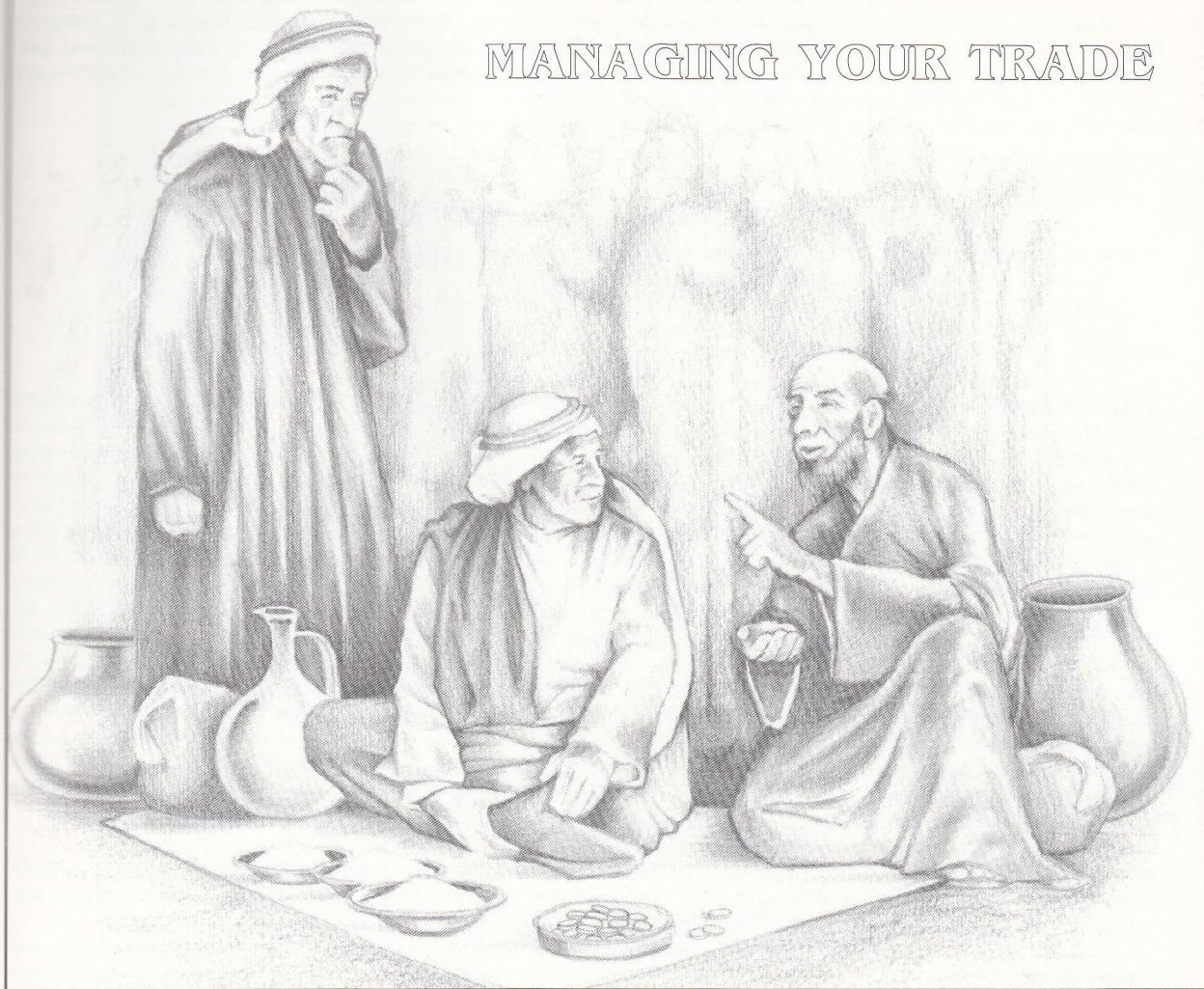
Trade is a fundamental force driving civilizations. It introduces unique and exotic valuables, stimulates the economy, and fires the imaginations of a culture's foremost thinkers. The effects of trade permeate society in many surprising and subtle ways, and your ability to direct trade's impact is likewise varied—and even subtle!

TRADE MANAGEMENT CONCEPTS

Taking up where we left off in **City Management Concepts,** these are the further divisions that result from the double arrow icon: diamonds, coins, and lightbulbs.

Diamonds make your population more content. The availability of luxuries means that some citizens can enjoy a more pampered existence. You'll learn more about luxuries when we talk about happiness a little later.

Coins maintain city improvements and add to your treasury. Taxes support basic city services, and surplus funds accumulate in your treasury. There are plenty of useful ways to spend money in *CivNet*, as we'll explain in a little while. If funding dries up, your city might be forced to sell off improvements.

Lightbulbs power your technological research. Each new advance requires the accumulation of a certain number of lightbulbs to achieve. The **Civilization Advance** chapter explains the details of the search for knowledge, but for now, you just need to know that new discoveries often allow you to build new units and city improvements, and sometimes open up the possibility of building Wonders of the World. In addition, each discovery leads to further discoveries, creating a chain of progress. If your cities don't produce many lightbulbs, your civilization doesn't progress very fast.

Which of these three is the most important? That varies according to what you want to achieve right now. To give trade management the most flexibility, *CivNet* lets you adjust the proportion of trade income that results from each of these three areas. The *tax rate* lets you change the ratio of taxes to research by ten percent increments. The *luxury rate* lets you further subdivide the percentage you allocated to research (when you set the tax rate) into a ratio of luxuries to research, also in ten percent increments.

In **City Concepts**, we mentioned that the Population Roster can tell you more than just the number of citizens in your city. It can also tell you your citizens' general level of contentment. Citizen icons appear in three different attitudes: *happy, content,* and *unhappy.* When you start building cities, you start with content citizens. The type of government your civilization develops and the level of difficulty at which you chose to play affect how rapidly unrest begins to trouble your populations. Unhappy citizens (red-garbed citizen icons at the end of the Population Roster) must be balanced by happy citizens (bright turquoise-garbed citizens at the beginning of the Population Roster), or your city falls into *civil disorder.* Not only does civil disorder sound bad, but it has all sorts of nasty consequences, as we'll explain shortly.

For now, you need to know that you can increase the happiness of your citizens several different ways, among them: *building specific city improvements* like Temples and Marketplaces (we'll explain all about **Improvements** shortly), *reassigning military units* (the dirt about martial law and foreign service effects appears under **Military Units**), *adjusting the luxury and tax rates* (as we'll discuss exhaustively under **Kingdom Menu** in **Reference: Screen by Screen**), and *pulling citizens off production work to make them specialists* (see **Specialists** for the skinny on this).

Phew! That's a lot of stuff to digest all at once. Just one more thing—we mentioned types of governments two paragraphs ago. Discovering new advances encompasses more than just new gadgets to improve sanitation and military might. The game counts philosophical concepts and theories as "new technologies," too. Every civilization starts out as a Despotism, but you can develop new forms of government. These might, in turn, have a profound effect on the happiness of your citizens and the rate at which your citizens produce raw materials, food, and trade.

TRADE RATES

When you start a new game of *CivNet*, none of your trade benefits are tied up in luxuries—instead, half of your trade is revenue from taxes, and half of it is intellectual property derived from research. If you are interested in focusing on civilization advances, you might want to increase the amount of research being conducted. If you rapidly build city improvements, you might want to increase your taxes to cover the maintenance costs. And, if you are concerned about the attitude of your citizens, you might want to increase the availability of luxuries to make your citizens happier (we'll explain all about happiness in a few moments). To change the proportion of tax and research income, pull down the KINGDOM menu and choose the option TAX RATE. Choose a new rate. You can check the resulting changes in the TRADE ADVISOR option from the ADVISORS menu. Experiment with different rates to see what levels of income and research you can achieve.

If you'd like to make luxuries available to your people, pull down the KINGDOM menu and choose the LUXURY RATE option. The total percentage you chose to devote to research can be further divided between luxuries and research. If you discover the percentages are too small, you can go back to the TAX RATE and adjust some more.

GOVERNMENTS

Another tool of city—and trade—management is the type of government under which your culture operates. Every civilization starts out as a Despotism. But some of the advances you can research are intellectual in nature, rather than technological, and these include four new governmental concepts. Once you have discovered a new form of government, your people can declare a revolution. (You can also gain access to new forms of government by building the Pyramid Wonder; see **Wonders of the World** in **Reference: Item by Item** for the skinny on this.)

Anarchy, or the lack of government, occurs only when you lose control, either because civil unrest topples your current government, or immediately following a revolution. Civil unrest continues as long as conditions are ripe for it. In the case of a revolution, your people's attitude naturally stabilizes. After a few turns, once your civilization settles down, a dialog box appears, listing all the possible forms of government your culture has available. Choose the one you like, and that regime takes effect immediately.

Each type of government has its own unique features. Some allow greater personal and economic freedom, resulting in rapid city growth, increased trade and blossoming scientific research, while others are better suited to building and employing large armies. You could look at governments as a continuum of increasing sophistication from Anarchy to Despotism, to Monarchy, to Communism, to the Republic, culminating in Democracy. Many governmental effects operate to a greater or lesser degree along this continuum. But depending on your style of play, you might not develop each advance in that order. So, we've collected the details of each form of governments' bonuses and drawbacks in regard to trade, support provided to units, production, and the attitude of the citizenry. We've sorted the list of governments alphabetically to make each easier to locate.

Anarchy

You have temporarily lost control of government. You continue controlling the movements of your units, and cities continue to operate on their own, but some important functions of your civilization grind to a halt until control is restored.

Trade: Corruption is rampant. No tax revenue is collected, no maintenance is charged for city improvements, and no scientific research is accomplished while Anarchy continues.

Support: Military units do not require raw material support until the number of units making a city their home (see **Unit Roster**) exceeds the number of citizens on the Population Roster. Each military unit in excess of the city's population points requires one shield for industrial support. Settlers require one wheat for support each turn.

Production: While Anarchy continues, citizens cannot work up to their potential. The penalty for this atmosphere of tension is that workers produce one fewer resource icon in any terrain that can generate more than two icons of any one kind. This effectively curtails the productivity of mines, for example, which might normally be worked for three shields, but only output two under Anarchy.

Attitude: Martial law (stationing troops in a city) can reduce unhappiness (see **Happiness and Civil Disorder**).

Communism

You are the head of a communist government, and you rule with the support of the controlling party. Although this form of government allows more production than Despotism, the orthodoxy of the party restricts personal and economic freedom, limiting trade. On the positive side, corruption is kept to a minimum by the action of the local party apparatus.

Trade: Under Communism, all of your cities suffer the same rate of corruption, representing the machinations of petty bureaucrats, regardless of their distance from your palace.

Support: Regardless of city size, each military unit requires one shield for support each turn. Settlers require two wheat for support.

Production: Under Communism, your workers maintain normal levels of production. In fact, collectives can offer increased production in improved terrain, including irrigated Grasslands and Rivers, and mined Hills. However, these increases are somewhat offset by the demands of the military machine.

Attitude: Martial law (stationing troops in a city) can reduce unhappiness (see **Happiness and Civil Disorder**).

Democracy

You rule as the elected executive of a Democracy. The people feel that you rule because they chose you. The degree of freedom allowed under this government results in maximum opportunity for economic production and trade. However, the people also have a very strong voice in determining how much economic production is devoted to improving the standard of living. Any diplomatic decisions you make are subject to review by your Senate—and the Senate always overrules actions that would lead to war.

Trade: One of Democracy's greatest advantages is its ability to squelch corruption. None exists in your cities.

Support: Each military unit appropriates one shield for industrial support each turn. Settlers require two wheat and one shield of support each turn.

Production: Under Democracy, your workers maintain normal levels of production. In fact, the entrepreneurial spirit offers increased production in improved terrain, including irrigated Grasslands and Rivers, and mined Hills. Also, workers can generate an additional double arrow wherever at least one already exists.

Attitude: Each ground and naval unit not stationed in its home city (except Transports, Diplomats, and Caravans), and each air and Nuclear unit—regardless of the city it occupies—makes two citizens unhappy. In addition, Democracy is fragile. If even one of your cities remains in civil disorder for more than two turns, a revolution occurs.

Despotism

You rule by absolute power. The people just have to live with it because your will is enforced by the army. Due to the severe limits on economic and personal freedom, production is at a minimum. But total control makes conducting war relatively easy.

Trade: Corruption is a major problem under Despotism, and trade income losses due to corruption increase with the distance a city is located from its capital, and with the overall size of the civilization.

Support: Under a Despotism, military units do not require resource support until the number of units making a city their home (see **Unit Roster**) exceeds the number of citizens on the Population roster. Each military unit in excess of the city's population points requires one shield icon for industrial support each turn. Settlers require one wheat for support.

Production: In addition, citizens cannot work up to their potential. The penalty for this atmosphere of tension is that workers produce one fewer resource icon in any terrain that can generate more than two icons of any one kind. This effectively curtails the production of mines, for example, which might normally be worked for three shields, but only output two under Despotism.

Attitude: Martial law (stationing troops in a city) can reduce unhappiness (see **Happiness and Civil Disorder**).

Monarchy

Your rule is less than absolute, and an aristocracy of upper class citizens influences your decisions. The aristocratic classes, at least, have a certain amount of economic freedom, and this results in the potential for greater production. However, the upper classes deduct a share of your civilization's production as maintenance for military units and luxuries in the larger cities.

Trade: Corruption is a significant problem under a Monarchy, though not as severe as it is under Despotism. Trade income losses due to corruption increase with the distance a city is located from its capital, and with the overall size of the civilization.

Support: Each military unit requires one shield for support each turn. Settlers require two wheat for support.

Production: Under a Monarchy, your workers maintain normal levels of production. Irrigated Grasslands and Rivers, and mined Hills offer increased production.

Attitude: Martial law (stationing troops in a city) can reduce unhappiness (see **Happiness and Civil Disorder**).

Republic

You rule over an assembly of city-states formed from the cities that your civilization controls. Each city is an autonomous state, yet also is part of the republic which you rule. The people feel that you rule at their request. They enjoy substantial personal and economic freedom, and this results in greatly increased trade. A Senate reviews your diplomacy, and has a chance to override your decisions.

Trade: Corruption remains a problem under a Republic, though not as severe as it is under a Monarchy. Trade income losses due to corruption increase with the distance a city is located from its capital, and with the overall size of the civilization.

Support: Of course, each military unit requires one shield for industrial support each turn. Settlers require two wheat.

Production: Workers in improved Grasslands, Rivers, and Hills all produce as they would under a Monarchy. Also, they produce an additional double arrow wherever at least one already exists.

Attitude: Each ground and naval unit not stationed in its home city (except Transports, Diplomats, and Caravans), and each air and Nuclear unit regardless of the city it occupies, makes one citizen unhappy each turn.

HAPPINESS & CIVIL DISORDER

Happiness and its inverse state, civil disorder, are indirectly related to trade. Lack of trade leads to stagnation, and a slow economy means a lack of goods and services. The citizens in your cities have one of three different attitudes or emotional states: happiness, contentedness, or unhappiness. The first citizens of your first city start out in a contented state. As the population of the city grows, competition for jobs, commodities, and services increases. Eventually, depending on the form of government your civilization employs and the economic conditions in your city, some citizens start to grumble and display unhappiness. If you don't take an active role in city management as population increases, the natural trend of citizens' attitudes is toward unhappiness.

So what can you do to counter this trend? If your population is already suffering civil disorder because of an attitude imbalance, you need to take immediate steps, as we suggest under **Restoring Order**. However, you needn't wait until a crisis occurs; you can keep citizens content by taking a longer outlook and providing services as the demand becomes imminent, or even ahead of demand.

Nanking (Pop:2,310,000)

Happy Citizens | Content Citizens | Unhappy Citizens | Entertainer | Taxman | Scientist

The POPULATION ROSTER gives you an at-a-glance summary of your citizens' attitudes.

The temperament of your citizens depends on the level of difficulty at which you choose to play. At Chieftain level, your people are so even-tempered that the first six citizens on the POPULATION ROSTER start out content. Each new citizen above this number starts with a bad attitude, and must depend on improvements, luxuries, martial law, and/or Wonders of the World to improve his or her state of mind. The number of citizens who start content decreases by one with each successive level of difficulty, until at Emperor level, your people are so temperamental that only two citizens start out content. The third and subsequent citizens show their unhappiness, and must be cajoled into better humor with any of the management tools at your disposal.

Special Unhappiness Factors

There are two special conditions that cause further unhappiness in some populations. Under a Despotism, and to a much lesser degree under other types of government, citizen unhappiness increases with the number of cities. This can lead to very unhappy citizens who must be converted first to unhappy citizens before they can become content. There is no graphic difference between very unhappy citizens and unhappy ones—both wear red garb on the POPULATION ROSTER.

Each ground or naval unit not in its home city, and each air or Nuclear unit regardless of where it is located, creates unhappy citizens: one per unit if your culture is a Republic and two per unit if your civilization is a Democracy. Transport, Diplomat, Caravan, and Settlers units do not cause unhappiness in this manner. When a city is in disorder, disbanding distant military units, returning them to their home cities, or changing their home cities, can make some unhappy citizens content and might restore the city to order.

Civil Disorder

As we mentioned in **City Management Concepts**, cities that don't maintain a favorable balance of happy people over unhappy people go into civil disorder. Cities in civil disorder produce no tax revenue, technological research, or food surpluses, and the condition suspends production. Prolonged civil disorder might bring down a government, and throw your civilization into Anarchy. A nuclear reactor in a city suffering civil disorder might experience a meltdown due to lax safety controls (see **Nuclear Meltdown**). Keeping a city stable is a very high priority.

A city suffers civil disorder when unhappy people outnumber happy people. Content people and Specialists are ignored in the calculation. When order is restored, the city returns to normal operation the next turn. You can restore order in several ways.

Restoring Order

You can pay to complete an improvement, such as a Temple, that can convert sufficient unhappy citizens to contentment (or content citizens to happiness) to restore the balance. See **Rush Jobs** for instructions on how to do this.

You can also change the luxury and tax rates of your civilization. Increasing the availability of luxuries might convert some content people into happy citizens, allowing them to balance the unhappy populace. See **Trade Rates** for information on economic manipulation.

You can take one or more citizens out of the work force, and make them Specialists. This increases the number of happy people. For information on how to do this, see **Specialists**. When creating Specialists, be careful not to also cause shortages of food or resources that trigger starvation of the population or the scrapping of armies.

If your civilization operates under Anarchy, Despotism, Monarchy, or Communism, you can use martial law to restore order to a city. Up to three military units, each with an attack factor of one or more, can be stationed in a city to enforce martial law. Each military unit makes one unhappy citizen in a city content. If you have enough military units to enforce it, and you have three or fewer unhappy citizens in your cities, martial law might be enough to restore order.

Celebration Days

If a city's population becomes sufficiently happy, it spontaneously holds a celebration in honor of your rule. The people declare a "We Love the King—or whatever title the leader of your government favors—Day" in thanks for the prosperity your management has made possible. While the circumstances that support this celebratory mood continue, the city enjoys certain benefits, depending on your civilization's type of government.

A happy population parades in celebration.

To trigger a celebration day, a city must fulfill certain conditions: There can be no unhappy citizens in the city; there must be at least as many happy citizens as content citizens, and the POPULATION ROSTER must number at least three citizens. Specialists are considered content citizens for this calculation. For example, a city with five happy citizens, four content citizens, and no unhappy citizens celebrates. A city with ten happy citizens, three content citizens and one unhappy citizen does not.

Celebrating Anarchy

The celebration has no effect when your government is in Anarchy.

Celebrating Despotism

The celebrating city (not your whole civilization—just this one location) operates as if its government is a Monarchy (see **Governments**). This can increase the amount of food and raw materials your citizens can produce in certain improved (irrigated and mined) terrain types.

Celebrating Monarchy/Communism

A celebrating city currently ruled by either of these governments operates as if its government is a Republic (see **Governments**). This increases the amount of trade your citizens can produce in any terrain that generates double arrows.

Celebrating Republic/Democracy

A city currently ruled by either of these governments increases in population by one point each turn it celebrates, so long as sufficient food is available. This can result in dramatic growth of the city.

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TERRAIN & MOVEMENT CONCEPTS

The game map in *CivNet* is divided into small independent parts, or *terrain squares*, as we mentioned in **City Concepts**. For simplicity, each square consists of a single type of terrain, even though the real world is not as perfectly organized as that. To represent that some types of terrain are easy to walk across and others require slogging through mud or hacking through thick underbrush, your units spend *movement points* to enter each new square. Every unit has an ADM rating (the acronym stands for Attack/Defense/Movement); the M, or third number in the rating, indicates how many movement points it can spend in a turn. You can find out all about units and their ADM ratings under **Military Units**.

Each terrain type has its own *movement point cost* (and they're all conveniently listed in the **Terrain Chart** on the **Player Aid Card**). Your Settler units can improve (that is, lower) these movement point costs by laying Roads and later railroads in terrain squares (see **Settler Units** for the skinny on how they do this). When a unit moves into a new square, it pays that square's movement point cost. If it has any movement points—or fractions of movement points—left after moving one square, a unit can attempt to move again until it reaches the limit of its movement points. Attacking counts as movement—that is, your units spend movement points to attack. You can read about the details under **Military Units**; what you need to know here is that a unit's attack might be reduced if it has spent most of its movement points moving. You'll get a message asking if you want to continue with the attack.

The proximity of enemy units or cities can also restrict a unit's movement options. Units and cities have what in military circles is called a *zone of control*: Their influence extends into the eight squares that immediately surround them. Your units cannot move directly from one rival's zone of control into another's zone of control (alliances in multiplayer games create exceptions to this rule—see **Multiplayer Games** for the complete skinny). You can think of it as tension or claustrophobia if those ideas help. The blockers don't have to be units or cities of the same civilization. The **Movement Restriction** diagram should make it clearer, so give it a look-see. Diplomat, Settlers, and Caravan units are exempt from these restrictions.

TYPES OF TERRAIN

The differences in terrain are deeper than a variety of artwork and colors to make the game map more visually interesting. Each type of terrain has its own economic usefulness, effect on movement, and effect on combat. Detailed information about the terrain types is provided all over the place—in the TERRAIN CHART on the PLAYER AID CARD, on the **Terrain List** in **Reference: Item by Item**, in the CivGuide, and from the CIVILOPEDIA.

To get terrain information from the CIVILOPEDIA, click on the CIVILOPEDIA menu, and select the TERRAIN TYPES option. A list of standard terrain types appears. Special terrains are described alongside the standard terrains in which they might occur.

Standard Terrain Squares

The standard types of terrain can be divided along climactic lines. Here's a short summary. Arctic and Tundra squares are both cold terrain. Neither produces much in the way of raw materials, and neither can be converted into more profitable terrain. Swamp and Jungle are both wet terrain. Neither is easy to move through, and it costs a considerable investment of time to convert either into more profitable terrain. Plain and Grassland squares are both open terrain. Both are easy to travel across, and when improved, both produce substantial amounts of food as well as other raw materials. Hill and Mountain squares are both vertically challenging. They take some effort to travel across and yield more raw materials when developed by mining. Both Ocean and River squares generate substantial amounts of trade, and terrain bordering each can be irrigated. Desert squares are dry terrain that can be developed for marginal production. Forest squares are difficult to travel through, but yield decent raw materials.

Special Terrain Squares

Special terrain can occur in many terrain types. Where they appear, they add significantly to the economic value of the terrain. Distinct symbols mark the location of these resources. If your Settlers units convert a square containing a special terrain icon into another terrain type, the original speciality is lost. In some cases, a new special terrain icon might appear in the new terrain. Right now, we'll give you a brief summary.

Coal deposits, shown as black lump icons in Hill terrain, represent rich locations of coal or metal ores. These areas produce greatly increased raw materials, especially when mined. Fish swimming in Ocean terrain represent the location of underwater banks and reefs where currents and nutrients create excellent fishing grounds. Fishing grounds produce increased amounts of food. A Deer trots through Forest terrain, while a Caribou lopes across the Tundra. The presence of game indicates excellent food sources available or the potential for good grazing, so game areas produce additional food. A Deer square can be converted into a Horse square by Settlers units.

Gems shine in Jungle terrain to indicate the presence of precious stones, ivory, spices, salt, or other valuable commodities. These are good trade items and, therefore, the square in which they appear generates substantial trade. A Gems square can be converted into either a Grassland square or a Deer square by Settlers units. Gold gleams in Mountain terrain, representing a bonanza of gold or silver. The value of these deposits produces tremendous trade. Horses trotting across the Plain represent an increase in raw materials due to the domestication of beasts of burden. A Horse square can be converted into a Deer square by Settlers units. An Oasis is a very fertile island in Desert terrain that produces substantial quantities of food. Black Oil pools in Swamp terrain, representing the presence of mineral wealth, especially petroleum. This substantial quantity of raw materials cannot be improved by mining. An Oil square may be converted into a Grassland square or a Deer square by Settlers units.

Optimal City Sites

The economic usefulness of the various terrain types is important when selecting city sites. Citizens work the terrain within a city's radius to produce the food, raw materials, and trade that the city needs to grow and be productive (see **The City Radius**). Some terrain types are more valuable than others, in that citizens working them produce more resources. Other terrains start out yielding little, and only develop their full potential when they are improved. These squares can be irrigated, mined, or surfaced for increased economic value. Other squares are important because they can be converted into more valuable terrain, as we'll discuss soon (for instructions on how to irrigate, mine, surface, and convert terrain, see **Settlers**). The best city sites offer immediate food, raw material, and trade production, plus the potential for long term development.

Terrain Conversion

When surveying sites for a new city, keep in mind the potential for terrain squares within the city's radius to be improved. Hill and Mountain squares can be mined so that citizens working them produce increased raw materials. Plain, River, and Grassland squares can be irrigated so that citizens working there produce more food. Swamp and Jungle squares can be cleared to yield Grassland or planted to yield Forest. Forest can be cleared to yield a Plain. Plain and Grassland squares can be retimbered to yield Forest if you need raw materials. An area dense with Jungle and Swamp squares looks barren at first, but has the potential to become a very rich city site.

Improvements are not limited to agricultural effects. Settlers also improve terrain by laying roads across terrain squares. Roads allow better access to a city, and therefore, increase the double arrows citizens working some squares produce. Plain, Grassland, and Desert squares all produce trade once penetrated by roads. Railroads eliminate the movement point cost of the terrain across which they are laid and might increase resource production as well. For more information on terrain improvements, see **Settlers**—they're the units that do the work.

Manipulating terrain to produce the maximum number of shields has a downside, of course. One cost of heedless industrial growth is a gradual polluting and poisoning of the environment. Of the many dangers posed by pollution in the real world, the greatest might be global warming. Theorists believe an unchecked rise in the planet's atmospheric temperature threatens catastrophic geographic changes including melting polar ice caps, rising sea levels, and parched farmlands. Different threats of poisoning occur if nuclear weapons are detonated or a nuclear reactor melts down.

CivNet models pollution from industry and nuclear disaster as a balancing factor for growth. As you steer your civilization into the industrial age, you must manage your cities and monitor your terrain to minimize pollution and prevent the disaster of global warming.

Pollution

Every turn, the game assigns a probability of pollution occurring within the economic radius of each city. The likelihood of this contamination depends on two factors: the number of raw materials (or shield icons) produced—industrial pollution—and the population supported—smog. In some cities, industrial pollution is the major factor in the calculation, and in other cities smog is a bigger hazard. Below a certain level, the chance of pollution is negligible, but as industrial output builds, so does the likelihood of its darker side effects. Smog has no effect on pollution calculations until your civilization acquires the advance of the Automobile.

Smokestacks begin appearing on the City Display in the General Information window when the combined pressures of smog and industrial pollution begin to create a significant threat of contamination. The number of stacks roughly indicates the probability each turn of a square within the city radius becoming polluted. For example, a city generating a large number of raw materials each turn (say 20) and inhabited by a large population might show several smokestacks in its City Display. The exact proportion of smokestacks produced by industrial pollution and smog depends on the difficulty level at which you set the game.

PLANETARY CARETAKING

Certain city improvements can help the situation. A Nuclear Power Plant, Hydro Power Plant, or Recycling Center improvement in a city reduces the impact of industrial pollution, in turn decreasing the accumulation of smokestacks. The Hoover Dam, a modern Wonder of the World, acts as a Hydro Power Plant for all friendly cities on its continent. The Mass Transit improvement eliminates smog.

The threat pollution poses is not limited by national boundaries in CivNet any more than it is in the real world. The risk of global warming increases for all cultures, regardless of what civilization causes the harm.

Nuclear Contamination

The detonation of nuclear weapons or the meltdown of a Nuclear Power Plant can also cause contamination. For game purposes, CivNet treats these threats identically to industrial pollution, though in real life their effects might be considerably longer term.

Nuclear Weapons

A Nuclear unit not only destroys the army or city it targets, but all units stacked with the target, and those in adjacent squares as well. It also pollutes a number of map squares around the impact square. Enemy units' zones of control (which are discussed under **Movement Restrictions**) might make it impossible for your Settlers units to clean up this contamination in a timely fashion, and your rival might not spend the time or manpower him- or herself. Unchecked pollution significantly raises the risk of a global warming disaster.

Nuclear Meltdown

If a Nuclear Power Plant melts down, half of the city's population is destroyed. Additionally, some random number of squares near the city become polluted.

The risk of meltdown always exists when a city that has a Nuclear Power Plant goes into civil disorder. Civilian unrest might result in safety procedures becoming so lax that a catastrophic accident occurs. If you build Nuclear Power Plants in any of your cities, take special care not to allow those cities to go into disorder.

When your civilization achieves the technological advance of Fusion Power, the risk of meltdown disappears. Your Nuclear Plants automatically convert to fusion-powered facilities, once you have achieved this advance.

Pollution's Effects

Pollution is represented graphically by black blots on the terrain square in which it occurs. It reduces the production of food, raw materials, and trade to one-half (rounded up) of pre-pollution levels. For example, a square where workers produced four wheat icons, one shield, and two double arrows before pollution blighted the square yields only two wheat, one shield, and one double arrow after contamination. Once the terrain is detoxified, workers' production returns to pre-pollution levels.

Polluted terrain can be detoxified by any Settlers units. The Settlers unit is marked with a "P" to note it has been ordered to detoxify a polluted square. After four turns of work, the pollution disappears. Adding more Settlers units to a polluted square does not speed the cleanup.

Monitoring Pollution

Your environmental advisors inform you immediately when any map square within your territory becomes polluted. Black smudges appear on the polluted square.

You can monitor the extent of pollution throughout your civilization by watching the pollution indicator, a small sun in the STATUS window. The color of the sun depends on the number of currently polluted terrain squares and the number of turns

Pollution Indicator

Polluted Square

Keeping tabs on pollution can become a full time job for some Settlers.

they have remained contaminated. It indicates the extent of the risk of global warming. The colors range from dark red, to light red, to yellow, to white. Dark red indicates a low risk and white indicates a very high risk. The STATUS window also contains a written GLOBAL WARMING summary which lists the risk of global warming in descriptive terms ranging from "slight" to "imminent."

Global Warming

Global warming might occur at any time that at least nine map squares, anywhere in the world, are polluted. The probability that it will occur increases with the length of time contamination on this scale is left untreated. If polluted terrain is left unattended for too long, environmental damage occurs, as detailed under **Disasters**.

Once an environmental disaster has occurred, the cycle starts over again. The planet achieves equilibrium at the new, higher temperatures. If pollution continues or increases once more to high levels, another bout of environmental problems might occur. This cycle can repeat endlessly if pollution is not controlled.

MINOR TRIBES

Thatch-roofed hut icons scattered about the map of the world indicate the presence of minor tribes. These populations are too isolated, too unorganized, or too migratory to develop into major civilizations. Minor tribes react to contact with a range of emotions, from delight to hostility. There is no way to predict a minor tribe's response, but most potential responses are favorable. Playtesters and *Civilization* fans alike call these hut icons "goody huts." Here's what might happen when you move a unit onto terrain that a minor tribe occupies.

Minor Tribe Icon

Minor tribe encounters have the potential for delight or disaster.

You Get a City

Occasionally a minor tribe is sufficiently advanced, yet awed by your emissary, to immediately form a new city and become part of your civilization.

You Get a New Civilization Advance

On the other hand, your unit might have stumbled upon a minor tribe which has discovered an advance unknown to your civilization. Graciously, they share their knowledge.

You Get Cash

To placate your emissary unit, a minor tribe might give your civilization valuable resources as a gift. The gift is absorbed by your treasury.

You Get A Unit

Your emissary unit stirs up the young bloods in the tribe with his tales of valor and victory. All the impressionable warriors run off to join your army, creating a new military unit "wearing your colors."

You Get Attacked

Your emissary makes a horrible *faux pas,* and the minor tribe turns vicious. A random number of barbarian units comes boiling out of the terrain squares that adjoin the minor tribe. Duck (or run, if you can).

MOVEMENT

There are two methods of moving units: by keyboard commands or by mouse clicks. The keyboard method uses the eight edge keys of the numeric keypad. The ⑤ key in the center is inactive: Think of it as your unit's position. The keys surrounding the ⑤ represent the points of a compass. Pressing ⑦ sends your unit northwest, while pressing ⑥ sends your unit east.

The mouse method involves placing your mouse cursor near the edge of the unit in the direction you want it to travel. When the cursor turns into an arrow pointing in the appropriate direction, click the left mouse button to make the unit move.

Units can move up to the limit of their movement factors, with a few caveats. The most important exception is that a unit with a movement factor of one (that is, if the last figure in its ADM stats is 1) can always move at least one square, regardless of the movement point cost of the terrain. Are we saying a unit can always move? Not quite. An enemy unit or city's presence can hamstring any unit with the *zone of control* restriction, as you'll see in a moment. There are other, common-sense restrictions on where units can move and where they can't, which are elaborated under **Movement Restrictions**.

Back to movement factors. A unit with a movement factor greater than one must compare its movement factor with the movement point cost of the terrain square you wish it to enter. The unit pays the movement point cost (subtracts the movement point cost from its remaining movement factor) for each new square it enters, until you choose to stop advancing, or the unit's movement factor is smaller than the movement point cost of the terrain square. There's a small chance that a unit can enter a square, even if its movement factor is lower than the movement

point cost of the terrain, which is why sometimes Chariots can cross Mountain squares, and sometimes they can't. When an army is unable to complete a movement order because it doesn't have enough movement points to proceed, its movement is finished for the turn. The map then centers on the next active unit.

Roads and railroads speed the movement of ground units. They do this by lowering the movement point cost of the terrain over which they are built. Any terrain square with a road across it costs just one third of a movement point to cross. Any terrain square with a railroad costs no movement points to cross—zero! Cities automatically have roads in their city squares, so entering a city square always costs one third of a movement point. The down side is that city roads never get upgraded to railroads, so your units can never slide through them for free.

The Active Unit Queue

Early in the game, you have few units, so it is relatively easy to remember where each is and what each is doing. However, as your civilization grows larger, so does the number of units you control. How do you know whose turn it is? Every turn, *CivNet* queues up all the active units (in random order). Then it activates each in turn by centering the map around the unit and making it blink. You can give orders to each unit as it comes up in the queue (see the **Orders Menu** in **Reference: Screen by Screen**). Three special orders deserve fuller explanations here.

No Orders

To skip a unit for the turn, press the No Orders (N or Spacebar) key. Once you've given a unit "no orders," the troops are on liberty for the day—you can't recall them to duty again this turn.

GoTo Orders

To send a unit on a long trek, press the GoTo (G) key. Your cursor turns into an arrow. In the VIEW UNITS window, click on a destination square for the unit. If the destination square isn't visible in the VIEW UNITS window, you can use the ZOOM OUT button to enlarge the area you are viewing, or click on the WORLD window to shift your view to another area of the map. Once a destination is established, the unit automatically "goes to" that square, whether it takes only one turn to complete its orders, or many turns. If the unit is attacked, or an obstruction prevents the unit from completing its journey, it becomes active once again. Ground units cannot travel between continents on a GoTo order.

Wait Orders

To skip a unit temporarily, press the WAIT (W) key. This passes you on to the next unit in the queue and sends the skipped army to the end of the line. You'll see this unit again after all the others have had a chance to move.

Activating Fortified and Sentried Units

Fortified units and those on sentry duty are not put into the active unit queue. If you want them to move or change position, you must activate them first. Click the mouse pointer on the square in which fortified or sentried units are stationed. This opens a box displaying all units in that square. Click again on the icons of all units you wish to activate. Fortified or sentried units within a city must be activated from within the CITY DISPLAY—see **City Display** for instructions on how to do this. Sentried units automatically activate when enemy units move into an adjacent square.

Movement Restrictions

Most of the restrictions placed on unit movement are a matter of common sense, as we mentioned earlier. We're spelling them all out here, in case you try to order a unit somewhere that seems possible and the game won't let you do it.

Ground Units

Ground units (all non-ship, non-air, or non-Nuclear units) normally move only on land. To traverse the wide (or narrow) oceans or even to get across lakes, they must board naval transport. Not all ships take passengers: see **Naval Units** under **Mobile Units** for a list of those that do.

Movement Restrictions Diagram
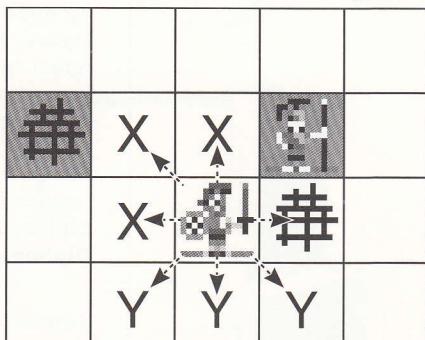
	= Enemy Army		= Friendly City
	= Friendly Army	**X**	= Moves not allowed
	= Enemy City	**Y**	= Allowed Moves

Notes:

1. **X** Moves are okay if those squares already contain an army from your civilization.
2. Movement restrictions do not apply to ships, air units, diplomats, and caravans.

Naval Units

Ships normally move only on the ocean, although they can also sail across inland lakes. Ships cannot navigate rivers, deltas, or swamps in the game, though of course some do in real life. City squares that touch a shoreline along one side or at one corner are the only "land" squares that ships can enter—here they make port, spending the rest of their movement points for the turn.

Air Units

Air units can cross both land and sea squares at a cost of one movement point per square, but they must land on a friendly city square or an Aircraft Carrier unit to refuel before their movement points expire. Though planes can fly above rival ground units in real life without causing an incident, they are required to encounter enemy ground units that they overfly in *CivNet*. To avoid attacking rival units by accident, carefully guide your planes around them. Air units have the advantage in maneuverability. Neither ground nor ship units can attack air units that appear "next to them" because of the disparate vertical locations. The one exception is the Diplomat unit's ability to bribe adjacent units into switching sides: see **Diplomats** below.

Zones of Control

Ground units cannot move directly from one square adjacent to an enemy army or city to another such square. The squares that surround a unit (or a city) are in that unit's *zone of control*. Neither ground troops nor Settlers units can move directly from one rival's zone of control into another square within a rival's zone of control. The prohibited square might be adjacent to the first enemy army, to another army (even one from a different civilization), or to any enemy city. Ground units can only move into such a controlled square if a friendly unit or city already occupies the square, or if, in a multiplayer game, you have formed an alliance with a rival player (which we'll explain fully in **Multiplayer Games**). Air units, having the whole sky in which to maneuver; naval units, having the open sea; Diplomats, who use social convention and diplomatic immunity with equal aplomb, and Caravans, who can argue neutrality and engineer special deliveries, ignore these restrictions. See the **Movement Restrictions** diagram for a graphic representation of these situations.

CIVILIZATION ADVANCES
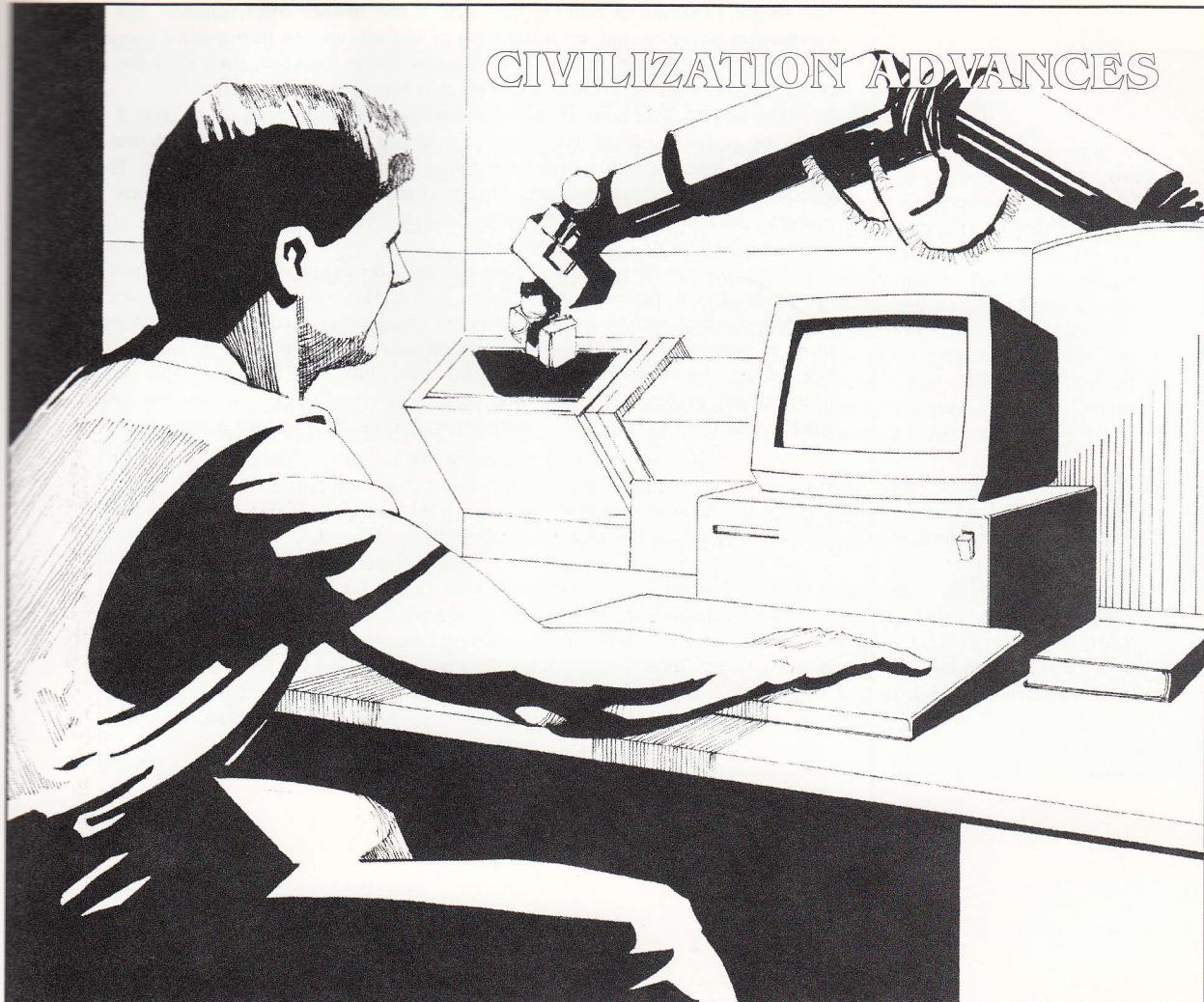
The major dynamic of change throughout the history of civilization has been the continuing advance and accumulation of knowledge. As humankind progressed by fits and starts through the ages, civilizations rose and fell, their success or failure due to what knowledge they acquired and how they employed it.

Those who first acquire new knowledge are often able to employ it to build a more powerful position. But there are many cases of civilizations that obtained some new invention first and then failed to use it to their advantage. The pace at which a society develops and implements new knowledge depends on many factors, including its social organization, economic organization, geographic location, leadership, and competition.

The concept of progress being not only inevitable, but even a good thing is a relatively recent phenomenon. Only in the last several hundred years have we actively studied history and considered the evidence of the historical record. For most of human history, the pace of progress was so slow as to be barely detectable. But since the Industrial Revolution, the pace of advance and change has dramatically increased. Rapid change is now considered normal. For much of the world, new discoveries are continually expected and are not a surprise.

THE CONCEPT OF CIVILIZATION ADVANCES

As we said in **City Management Concepts,** *lightbulbs* are what drive your civilization's scientific and intellectual growth. The lightbulbs each city generates every turn represent a percentage of the total trade, or double arrows, that city brings in. You can adjust the number of lightbulbs generated with the TAX RATE and the LUXURIES RATE options in the KINGDOM menu. A low science ratio generates few lightbulbs; a high ratio generates more lightbulbs.

You want to accumulate lightbulbs to gain *advances,* or new technologies. Each new advance allows your civilization to build new units or city improvements; sometimes a new advance makes possible the construction of a new Wonder of the World. Each new civilization advance also opens up a path to researching further technologies. You could look at the connections between advances as a flow chart (see the PLAYER AID CARD for an example), as a web, or as a tree. The important concept is that each technology is a building block that allows research into further advances. If you discover all the advances in the game, each futuristic advance you research adds *bonus points* to your final score, as we'll explain in **Future Technology,** coming right up.

Accumulating lightbulbs isn't the only way to gain advances. Contact with a minor tribe might also net you a new civilization advance—see **Minor Tribes** for all the possible outcomes of an encounter. Finally, parley with other civilizations can result in an option to exchange technologies. We'll give you the full details under **Diplomats**.

The lightbulb icons produced by each city you own are totaled in the SCIENCE ADVISOR'S REPORT (see **The Advisor Menu** in **Reference: Screen by Screen** for more about the Science Advisor and his duties). Each new advance that your civilization discovers "costs" a certain accumulation of lightbulbs. As time progresses, new advances require more lightbulbs in research. The SCIENCE ADVISOR'S REPORT also lists the technologies you have already discovered or been given, and the current advance your scientists are researching.

CLIMBING THE TECHNOLOGY TREE

Once your civilization begins to accumulate lightbulbs, your Science Advisor asks you to choose a new civilization advance to research. He might suggest a topic he believes will be useful. Click the OK button to clear the advisor's dialog box. The RESEARCH OPTIONS menu lists the advances you can research. This list might represent all the possibilities currently available, given the advances you already have made. More often, the list contains only a portion of the possibilities, representing the ideas on which your scientists are focusing. Technologies you should be able to research but that are not on the current list of possibilities eventually show up (at a later choice-point). Once you have chosen a direction for your research, you cannot change your mind. Your scientists pursue that topic until they learn the new civilization advance.

When research is complete, your chief investigator announces the discovery. Several screens appear detailing the impact of the advance, including any new units, city improvements, and Wonders that have become available. The PRODUCTION menus in each CITY DISPLAY are immediately revised to include these new items wherever they are appropriate (for instance, inland cities can never build ships, so ship units never appear on their PRODUCTION menus, even if you have discovered Navigation or later seafaring advances).

As each new advance is acquired, your advisor appears again to ask for a new topic to research. The list of choices is updated with each new discovery to reflect your growing knowledge base. Technologies you acquire through other means than research (see **Diplomats** and **Minor Tribes** for details) no longer appear on the list of choices—you've already discovered them. If by chance you're given the civilization advance your scientists are currently researching, your Science Advisor immediately switches the research effort to a new topic of your choice—the accumulated lightbulbs that represent research into the gift advance are transferred to the new topic.

Each advance is discussed in detail in the CIVILOPEDIA, and outlined in the **Advance List** in **Reference: Item by Item**. When your Science Advisor asks you to choose a new topic to research, before making your choice you can immediately get help concerning the available technologies. Select the advance you wish to know more about and press the HELP button. The CIVILOPEDIA entry about the advance opens for you to read.

The Player's Aid Card

The PLAYER'S AID CARD contains a graphic technology tree or flowchart that lists every civilization advance in *CivNet*. For easier reference, advances are subdivided into the same three ages as Wonders of the World. The age of your civilization does not limit the advances you can research in any way.

Each entry on the chart gives the name of the advance and any new units, improvements, Wonders, or spaceship parts your civilization can now build as a result of this discovery. Many technologies are the synergy of two diverse threads of inquiry. As a result, a second prerequisite advance might be listed in parentheses below the name of the current advance. By following the arrows along the chart, you can see that Alphabet leads to Mapmaking. By reading the second prerequisites, you can see that Mapmaking (along with Astronomy) leads to Navigation.

You can use this flowchart as a quick reference to what you want to discover next, or to plan an extensive research effort that culminates in an important technology like Railroad or Nuclear Fission. It can also remind you of advances you are ignoring.

Using the Research Advisor

If you are unfamiliar with *Civilization* or *CivNet,* the technology tree can look dauntingly complex. Your Research Advisor can help you negotiate the twists and turns of civilization advances. When you choose the RESEARCH ADVISOR's report from the ADVISOR menu, you see a list of all advances within two levels of your highest technologies. Your top theoreticians speculate that current research will eventually lead to these discoveries (not being magicians, they can't predict the entire tree for you, only the near-to-discovery branches). For each choice, your advisor can show a portion of the research path that culminates in that discovery.

If the ADVICE option is checked on your OPTIONS menu, you can confirm this path by clicking the CONFIRM ASSISTANCE button. Whenever the choice to pursue new research occurs, your Research Advisor reminds you of the advances you need to make to achieve your goal.

The RESEARCH ADVISORS can help direct your research toward a specific discovery.

FUTURE TECHNOLOGY

You might eventually acquire all of the advances of technology through the twentieth century. Thereafter, your scientists can only research futuristic advances. The only choice available is "Future Tech"; when your civilization accumulates enough lightbulbs to finish one unit of Future Tech, you can research another. Each Future Tech you discover adds five points to your final score (see **Scoring** for other ways to boost your final score).

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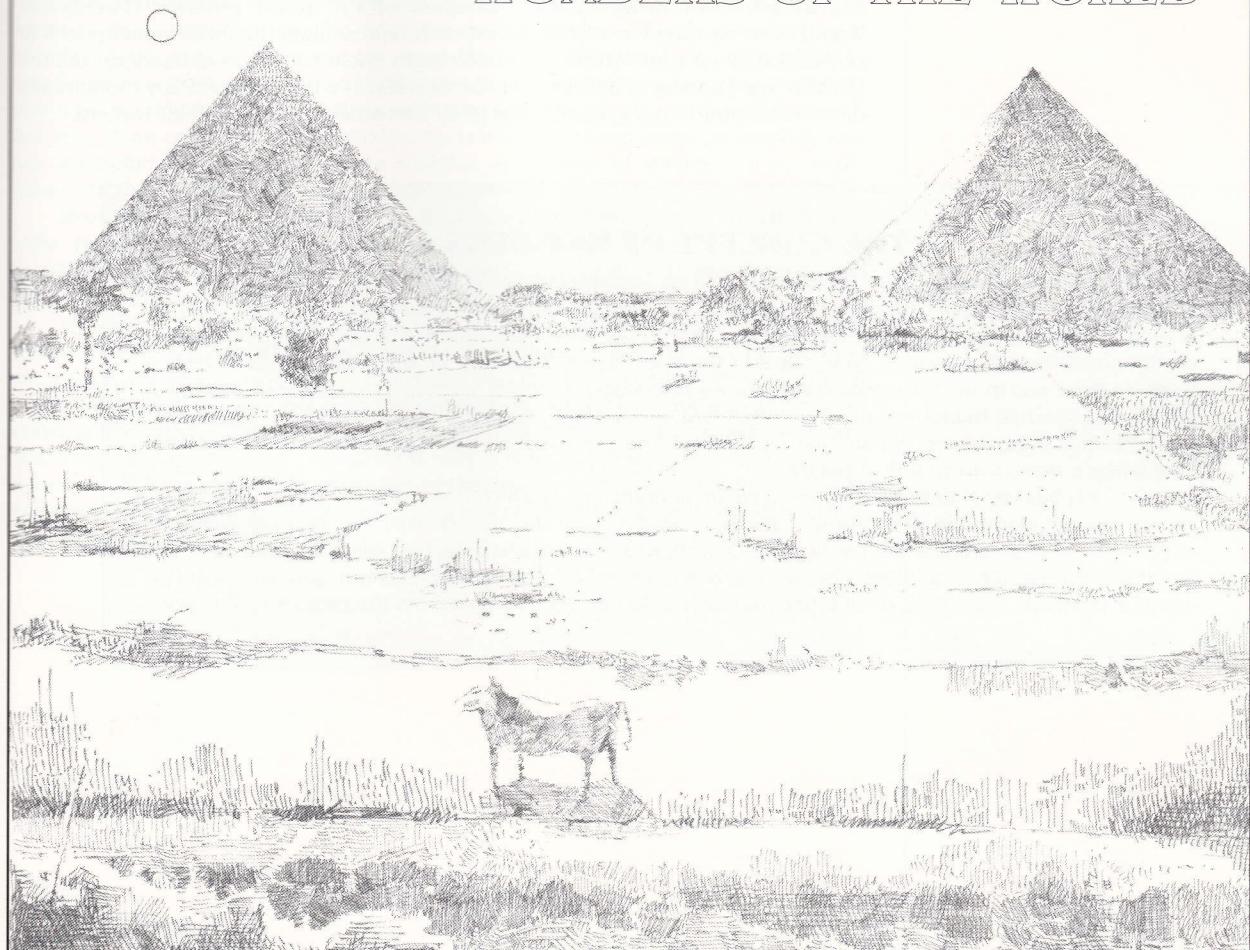
A Wonder of the World is a dramatic, awe-inspiring accomplishment. It is typically a great achievement of engineering, science, or the arts, representing a milestone in the history of humankind. As your civilization progresses through the years, certain advances make building Wonders of the World possible. Twenty-one Wonders are included in *CivNet*, seven each representing the three great epochs of civilization: the Ancient World, the Middle Ages (including the Renaissance), and the Modern Age (present and future). These Wonders are the extraordinary monuments of a civilization, bringing everlasting glory and other benefits to their owners.

THE CONCEPT OF WONDERS

Wonders of the World are like extraordinary city improvements, in that they are structures (or achievements) that your civilization can undertake to "build." Unlike city improvements, *each Wonder is unique, existing only in the city where it is constructed.* Each one confers a specific, unique benefit on the civilization that owns it (you can find the specifics in **Wonders of the World** in **Reference: Item by Item** and in the CIVILOPEDIA listing for each Wonder). If one of your cities is captured by a rival power, and you had built a Wonder there, that Wonder no longer benefits your civilization. Instead, its bonuses now apply to the conquering civilization. The same holds true if your units capture a city containing a Wonder from a rival player.

If a Wonder is destroyed by the decimation of the city in which it stood, it can never be rebuilt. Its benefits are lost to the world forever. Further, the glories of the ancient Wonders and most Wonders of the Middle Ages do not stand for all time. Objects and accomplishments that awed the ancients lose their luster for people of the Modern Age. *The achievement of later advances can negate the benefits of older Wonders,* regardless of whether your civilization or another discovers the canceling advance.

You can build a Wonder only if you have discovered the advance that makes it possible, and it does not already exist somewhere else in the world (if it exists in another city, it won't appear as an option in your PRODUCTION menu). However, you can start construction of a Wonder even if another civilization is working on the same project—you just race to see who gets done first. If you are building a Wonder in one of your cities and the same Wonder is completed elsewhere before you finish, you must convert your production to something else. Any excess shields you have accumulated beyond the number required to construct your new project are lost, so be careful what you choose. As you click on each potential project, you see a graphic representation of the shortfall or overage of shields you currently have with respect to the new project's requirements.

Wonders are not destroyed when an enemy captures the city in which they exist. However, if a city possessing a Wonder is destroyed (that is, if its population is reduced to zero by siege or bombardment), that Wonder is lost forever and cannot be rebuilt.

Wonders of the World are often long-term projects (as befits their magnificence). If you want to accomplish construction of a Wonder faster than the city that is building it can generate shields, you have two options. You can divert trade goods into the Wonder's coffers by moving a Caravan unit into the city of construction and accepting the choice HELP BUILD WONDER—see **Caravans** for details about Caravan interactions. The second option is to spend cash directly from your treasury. Click the BUY button at the top of the PRODUCTION menu; if you have enough cash on hand to purchase the Wonder, you can choose to pay, and the Wonder will be completed next turn.

CONSTRUCTING WONDERS

Wonders can be built in any city and more than one may be built in the same city. Each Wonder has both specific and general benefits. You can read about the specific benefits in **Wonders of the World** in **Reference: Item by Item** or in the appropriate CIVILOPEDIA entry. The glory that accrues to your civilization for possessing a Wonder is one of the general benefits conferred by such great works; more importantly, this glory continues to accrue even if new advances make the Wonder's specific benefit obsolete. In addition, each Wonder that your civilization possesses adds to your *CivNet* score. The presence of Wonders are significant to the calculations determining the top five cities in the world. Further, the presence of Wonders influences historians, such as Gibbon, who periodically rate the world's civilizations. Finally, Wonders also sway your people to improve your palace (see **Palace** for the particulars).

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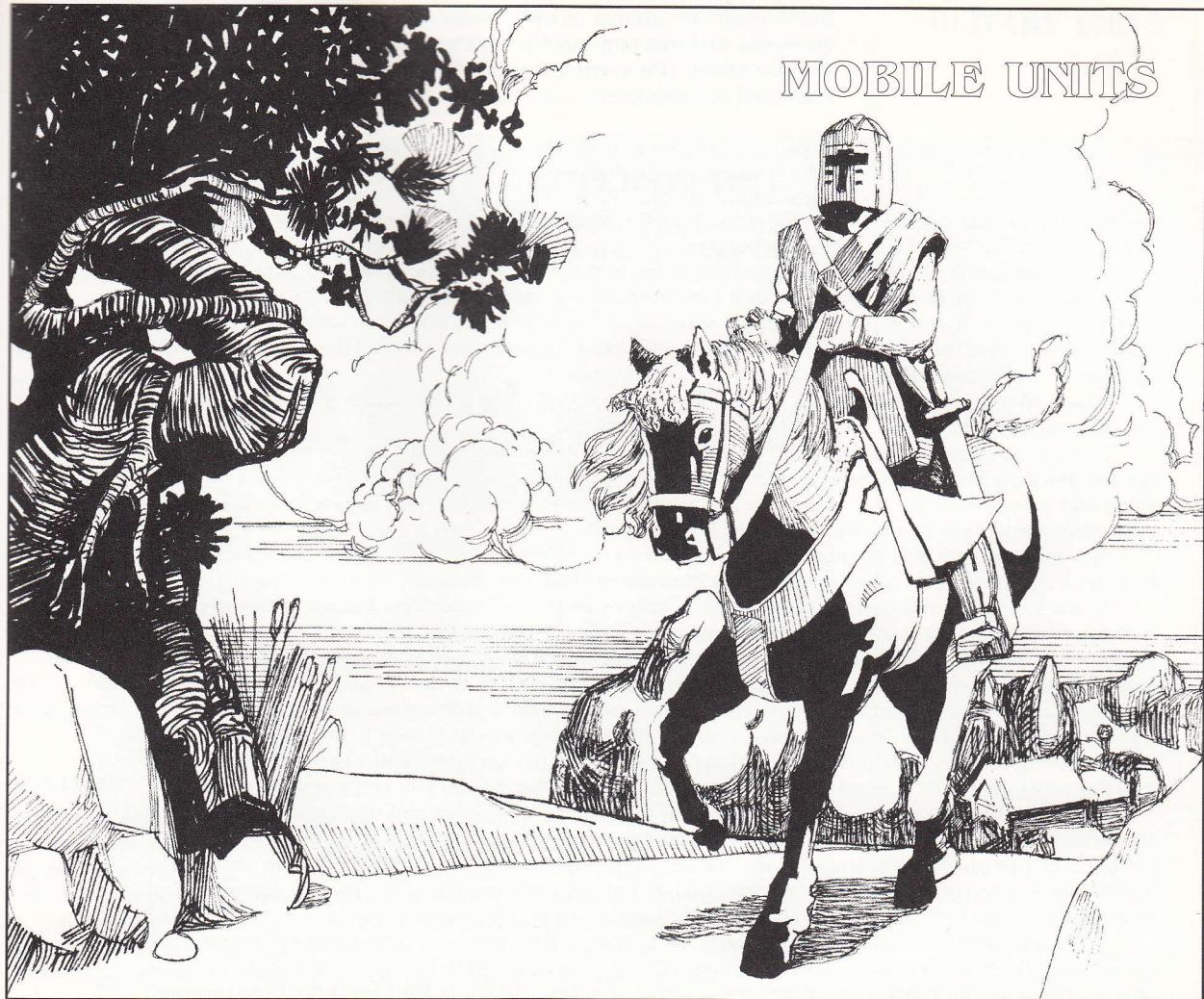
Mobile units are groups of citizens, soldiers, and envoys that can move around the world of *CivNet* and interact with other units and civilizations. Some units, like Caravans, Diplomats, and Settlers, have special functions which are explained separately.

UNIT CONCEPTS

Mobile units are the pieces you move around on the map in *CivNet. Each civilization's units are a different color.* Red units are always barbarians.

Mobile units can be divided into types according to the way they move: ground (or land) units, air units, and naval (or sea) units. Each unit has statistics for attack strength, defense strength, and movement points. These stats are listed in a shorthand, code-like set of numbers, which we've already mentioned is called the ADM — this stands for Attack/Defense/Movement. You can find each unit's ADM numbers in **Reference: Item by Item** and in the CIVILOPEDIA.

Attack strength is the force with which a unit strikes. Units with a high attack strength are useful for offensives in which you (actually, they) are the attackers.

Defense strength is the force a unit can absorb before it dies (the unit disappears from the screen, accompanied by a dirge-like sound effect). Units with high defense strength are useful for defending cities and other positions against enemy troops. The terrain on which a unit stands can increase its defensive strength, as you'll find in **Terrain & Movement**.

Movement points indicate how far a unit can travel—or how many times a unit can attack—in a turn; they're explained in detail in **Terrain & Movement,** too.

A unit's status is important when you want to give or change its orders. Units can be on *active status,* which means they blink each time they come to the "front" of the active unit queue. Units on *sentry status* remain inactive (they turn grayish so you can tell they're on sentry duty) until an enemy unit comes within one square of them. At this point, they "wake up" and become active. Units on *fortified status* are also inactive (their status is indicated by a thick gray outline around the icon)—in fact, they are entrenched in a defensive posture. They remain inactive even if rival units approach them. Clicking on either a sentried or fortified unit allows you to change its status to active, and places it in the active unit queue again. When the unit comes up in the queue, you can give it new orders.

Every unit has an *observation* factor. Most units can only "see" units and objects on the edges of the terrain squares directly adjacent to their own. Early in the game, when most of the map is black, the limits of this observation area are obvious, as the blackness rolls back only so far with each move a unit makes. Even after you have explored a continent, barbarians and rival units can appear "out of nowhere" because they are lingering outside the limits of your units' observation.

Some advanced units have greater observation factors. They can "see" into a second square in all directions, which makes them useful for monitoring rival's movements and anticipating surprise attacks. Exceptional observation factors are noted in unit descriptions in **Military Units** in **Reference: Item by Item** and in the CIVILOPEDIA.

Through the years, the majority of your time is spent moving and positioning armies. A strong military is the best defense against rivals and barbarians. Military units are also the eyes of your civilization, exploring the world as they move. Finally, they can serve you offensively by defeating the armies of your rivals and capturing their cities.

Armies can be ground units (Legions, Cannons, and Armor, for example), naval units (Triremes, Ironclads, Battleships, etc.), or air units (Fighters, Bombers, and Nuclear units). Three special units—Caravans, Diplomats, and Settlers—need further explanation, so they're discussed in detail a little later. All units are described in the MILITARY UNITS option of the CIVILOPEDIA and in **Military Units** in **Reference: Item by Item**.

Ground Units

The majority of CivNet's units are ground units. These armies move over the map terrain square by terrain square. They spend movement points according to the type of terrain they are entering, observe movement restrictions like zones of control, and attack rival units when you move them into a square containing an enemy army. All ground units have an observation of one square.

Pillage

A special task that ground units can accomplish is pillage. Armies can strip the countryside through which they roam of any improvements the Settlers of that civilization have built, tearing up roads, trampling crops, and burning mines. The occupying army destroys one improvement each time you press the P key, or choose PILLAGE from the ORDERS menu. It takes one turn to pillage one improvement. The sequence in which pillaging troops wreak havoc is detailed in **Settlers** under **Pillaging**.

Air Units

Fighters, Bombers, and Nuclear units are the only air units in CivNet. Air units operate under some special movement rules. These units can cross any terrain square at a cost of one movement point per square. Because they are airborne, they get no bonus for crossing squares improved by roads or railroads.

Both Fighter and Nuclear units must end their movement either in a friendly city or on a Carrier unit, as these are the only areas where they can safely land. A Fighter can attack a target as many times as it has movement points. However, be sure you save enough movement after the attack to return to a landing area!

A Nuclear unit can only attack once; the icon represents a missile that is spent in its attack. If you have miscounted the number of squares to your destination, or another unit's movement or position prevents a Nuclear unit from reaching a target city or unit, you can attempt to return the missile to a friendly city or Carrier unit. If your missile gets stranded—that is, there is no target unit or city within reach, and no safe landing area—the missile is a dud that falls to earth harmlessly. It disappears from the game.

If a city is the target of a nuclear attack, half of the population is destroyed. All military units in and adjacent to the target square are destroyed as well, regardless of the civilization to which they belong. If a military unit or stack of units is the target, all units in the stack are destroyed. In addition to the loss of units, all land terrain squares adjacent to the impact square become polluted.

A Bomber unit has a unique movement point capacity. It can travel up to eight squares per turn, and it only needs to land for refueling every other turn. A Bomber can only attack once, regardless of its remaining movement points. In addition, attacking uses all the unit's remaining movement points for the turn. Therefore, if you attack during the Bomber's return flight, it does not have enough movement points to return home safely, and it crashes and disappears. Bombers have an observation distance of two squares in any terrain.

Naval Units

Naval units also adhere to some special rules. Some naval units have the capacity to carry passengers, or ground units. These include Triremes, Sail units, Frigates, and Transports. Carriers can transport air units only. When two ships occupy the same square, the one that leaves first takes up to its carrying capacity of passenger units with it.

Most Naval units can conduct shore bombardments—that is, they can attack units standing on the coastal squares of continents and islands. Submarine, Transport, and Trireme units are the exceptions to this rule.

Carriers, Cruisers, and Submarines have enhanced observation ranges at sea. Each can "see" enemy ships and planes from two ocean squares away. Rival Submarine units are the only exception to this rule, as their ability to travel underwater camouflages them from view (it likewise conceals your Subs from your enemies), unless the Submarine is adjacent to the observing unit.

Combat occurs when a unit attempts to enter a map square occupied by a unit or city of another civilization—unless the unit is a Diplomat, in which case it can offer bribes to units or conduct a variety of business in cities—or unless the unit is a Caravan, in which case it can establish a trade route when it enters a city. Everybody else just fights. Battles are immediately resolved.

Most battles result in the destruction of one army or the other. When more than one unit occupies the defender's square, the unit with the highest defensive strength (as determined by comparing the second digit in the units' ADM numbers, and making allowance for veteran status) defends. If it loses, then all other armies stacked with it are destroyed as well. However, stacked units taking advantage of Fortress improvements or taking cover in city squares are destroyed one at a time.

Successful attackers that have movement points remaining after combat can continue moving—and even continue attacking—normally.

The important factors in combat are the attack and defense strengths of the combatants, the presence of veteran units on either side, the terrain occupied by the defender, and any defensive improvements in the square. In addition to considering all of these factors, combat also includes an element of chance. Imagine that sometimes, a unit just gets lucky. We don't want to drag you through lots of heavy arithmetic for each combination of factors, but the calculations can be boiled down to a simple comparison.

The total modified attack and defense factors are combined and the probability of either side winning is approximately the ratio of each side's factor compared to this total. For example, if a Chariot (attack factor 4) attacks a Phalanx (defense factor 2), the total of the factors is 6 (4 + 2). The Chariot has about a 66 percent chance of winning (4 out of 6) and the Phalanx about a 33 percent chance (2 out of 6).

How do those adjustments for veteran status and terrain and so on work? They're added into each factor they affect before the total is determined. For instance, if both units are veterans, each gets a 50 percent bonus to attack and defense, giving the Chariot an attack factor of 6 (4 + 2) and the Phalanx a defense factor of 3 (2 + 1). Of course, modifying each unit's factors also changes the total: Instead of 6, it is 9 (the total of each modified factor, 6 + 3). Now the odds are close to 6 out of 9 for the Chariot and about 3 out of 9 for the Phalanx. If both are veterans *and* the Phalanx is behind City Walls (which triples a unit's defense factor, making the veteran Phalanx a 9), the odds are about 6 out of 15 for the Chariot and close to 9 out of 15 for the Phalanx.

Air battles, city attacks, shore bombardments, nuclear attacks, bribing enemy armies (see **Diplomats**), and defensive fortifications are special combat situations, and have special rules.

Air Battles

Only Fighters can attack Bomber units. In fact, Bombers prevent enemy units (other than Fighters) from even entering, much less attacking, the square they occupy. Bomber and Fighter units do not help defend cities that they occupy. If the city is captured, they are destroyed.

City Attacks

A successful ground attack on a city destroys only one defending unit at a time. However, each successful attack also reduces the population of the city by one point unless the city is protected by City Walls. Population loss does not result from naval or air attack, but *is* caused by nuclear attack.

Shore Bombardments

Other than Submarines, any naval units with an attack factor greater than zero can attack enemy units on adjacent land squares (they are conducting shore bombardments). Cities along the coastline are vulnerable to shore bombardments, too. Naval units can defend the cities they occupy against attack.

Nuclear Attacks

Nuclear attacks occur when a Nuclear unit attempts to enter a square occupied by enemy units or an enemy city. In either case, all units in the target square and adjacent squares are destroyed, regardless of their cultural allegiance (in other words, both theirs and yours). In addition, a bombed city loses half of its population. The only defense against nuclear attacks is the SDI Defense city improvement.

Defensive Fortifications

Units within defensive fortifications essentially gain the protection granted by City Walls without being stationed in a city. A unit stationed within fortifications triples its defensive strength, and stacked units are destroyed one at a time. Settlers units can build fortifications on any terrain square (except a city square); see **Settlers** for the complete skinny.

Caravan units represent shipments of trade goods and materials. Though the icon remains a camel, as history progresses, your Caravan units are stand-ins for the continuum of trade vehicles from camel caravans and wagon trains to truck convoys and cargo containers. They can be used to establish trade routes between cities or to transfer resources for the construction of Wonders of the World. Caravans become available once you have achieved the advance of Trade.

Trade Routes

A Caravan can establish a trade route by entering any rival's city, or by entering a friendly city (one in your own civilization) ten or more squares away from its home city. Your treasury gains an immediate cash payment for delivery of the first load of goods, and your research scientists gain an immediate bonus for cultural exchange of an equal number of lightbulbs. The home city of the Caravan gains an increase in the trade generated each turn, which represents a continuing economic relationship. A listing at the bottom of the GENERAL INFORMATION window shows the cities where trade routes have been established, and the number of bonus double arrows generated every turn. Bonus icons are added into the total number of double arrows your city produces, so that indirectly they boost your lightbulb, coin and/or diamond production in that city.

Each city can have up to three functioning trade routes. If you establish more, only the best three function—that is, the ones that generate the most bonus icons per turn.

The number of double arrows generated by a trade route depends partly on the size of the two cities. Bigger cities generate more trade. Trade with a city from another civilization is of greater value than trade with friendly cities. The farther apart the two cities are, the greater the bonus for trading between them. Trade bonuses also increase when the cities are on different continents. If you capture a rival city with whom you were previously trading, the trade route remains active. However, the number of double arrows it generates is reduced because items which were once exotic imports have become domestic commodities.

Caravans can enter any city they can reach. They are not hampered by movement restrictions like zones of control, but their ADM numbers are low enough that they might find it difficult to smuggle goods into an enemy city without being destroyed. Caravans can take advantage of naval transport to trade overseas (you can load them aboard any ship that carries units), but they cannot disembark into a city directly from a ship.

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Building Wonders

A Caravan can contribute shields equal to its construction cost to any Wonder of the World you are undertaking. Simply move your Caravan into the city in which construction of a Wonder is underway. A dialog box offers you the choice of contributing to the construction. If you decide to help build the Wonder, your Caravan disappears and its worth is added to the production of the Wonder, speeding its completion.

DIPLOMATS

Diplomats are unique units that can act as ambassadors, envoys, secret agents, and saboteurs. They can open contacts with other civilizations and establish embassies to gather information about your rivals. They can act as spies, stealing information and otherwise disrupting your rivals. They can bribe enemy armies. When your civilization obtains the advance of Writing, you can build Diplomats.

Be aware that enemy Diplomats can use all the same techniques against your civilization as you use against theirs. In addition, all enemy Diplomats appear to be the same, neutral gray color. (Your units look gray to your rivals, too.)

Bribing Enemy Units

You might convince an enemy unit to defect and join your civilization. In game terms, simply move a Diplomat into a square occupied by a single enemy unit (Diplomats cannot bribe units that are stacked together). A dialog box appears, showing how many coins the unit demands to defect. The farther a unit is from its capital, the fewer coins required. If you accept, the coins are deducted from your treasury and the army switches sides (becomes your color). The Diplomat survives the discussion regardless of his success in negotiating; however, if you do not choose to pay the bribe the enemy unit might attack the Diplomat in its next turn. Diplomats can bribe naval and air units as long as these are not stacked with other units.

Bribery is considered an act of war. As such, if your Diplomats bribe units of civilizations with whom you are at peace, they are breaking the treaty (see **Peace** for complete details).

The nearest friendly city becomes the home city for a newly bribed unit (see **Unit Roster** for information on this point).

Entering Enemy Cities

Diplomats can slip past enemy armies without pausing to observe zones of control, using superior powers of persuasion and/or diplomatic immunity as a shield. However, the unit's low ADM numbers mean that if an enemy unit *does* choose to attack, the Diplomat is always destroyed. Diplomats can travel overseas in ships as do other ground units.

Diplomats are one of only two units that can enter defended enemy cities (Caravans are the other). A menu listing the tasks a Diplomat can perform appears whenever you send your envoy on an urban mission. If, after you've looked over your choices, you decide not to take any action, choose the No Action option to back out of the menu.

Some tasks require that you spend coin icons from your treasury: These represent greasing the appropriate palms. Some tasks "use up" the Diplomat icon itself, representing the placing of moles, establishment of embassies, or the personal danger of under-cover work. We've extracted all the variations into a table which lists the task, the cost, if any, and the effect on your game icon. Full explanations of each activity appear after the table.

Task	Cost	Effect on Diplomat
Investigate City	No	Destroyed
Establish Embassy	No	Destroyed
Steal Advance	No	Destroyed if successful
Industrial Sabotage	No	Destroyed
Incite a Revolt	Yes	Destroyed if successful
Spy on Chat	No	Destroyed if successful

Investigate City

Your Diplomat unit acts as a spy to get information about the rival city's production and development. In game terms, this option shows you the enemy's City Display. You can examine what armies are defending the city and what improvements have been built there. When you exit the City Display, you return to the View Units window, but your Diplomat has been eliminated.

Establish Embassy

Your Diplomat unit establishes official contact with the rival civilization, setting up an office in the city to which you sent him (he stays there to staff it, so the icon disappears). In game terms, you can access information about your rival's type of government, treasury, number of armies, the name of its capital city, treaties with other civilizations, states of war, and technological advances whenever you look at your INTELLIGENCE ADVISOR's report (see **Advisors** for the complete skinny). The historians' lists of outstanding civilizations that occasionally pop up only include those with whom you have established embassies. It is only necessary to establish an embassy once with any particular civilization.

Steal Advance

Your Diplomat steals one civilization advance from a rival civilization. In game terms, your spies can only confiscate one advance per city and the Diplomat disappears in the process (his cover is blown). If you have already stolen a civilization advance from this particular city, or if the enemy civilization has discovered no technology worth stealing, the Diplomat unit loses its turn but is not destroyed.

Industrial Sabotage

Carefully maneuvering in the back streets, your spy manages to infiltrate some critical city organization or defense. In game terms, your Diplomat destroys either whatever item the rival city currently has under production, or one of the rival city's existing improvements—the item targeted is a matter of random chance. The Diplomat is lost in the effort (think mad, suicidal bombers if it helps). If your spy destroys a critical improvement, it might throw the city into unrest (Temple, Cathedral), weaken its defenses (City Walls), or cut its production (Factory). Diplomats never destroy Wonders of the World.

Incite a Revolt

Your Diplomat contacts dissidents within a city and provides the necessary means for them to overthrow their current regime. In game terms, for a suitable payment, the city revolts and joins your civilization. The amount needed to finance a revolt depends on the size of the city and its proximity to the enemy civilization's capital. Enemy capitals never agree to revolt. Also, it costs less to push a city already in civil disorder into open revolt than it does to undermine a contented city. Your Diplomat is lost in a successful revolt (he stays to organize the new government), but he escapes outside the city if you refuse to pay the cost. The revolt also fails and your Diplomat escapes if you don't have enough cash to finance the project. If the overthrow is successful, all units within one square of the revolting city that belong to that rival civilization also revolt and join your regime (exceptions are noted under **Military Units**). All other rival units who counted that city as home are disbanded. All existing city improvements except Temples and Cathedrals remain intact.

SETTLERS

Settlers are groups of your most resourceful and adventurous citizens. As independent pioneers, they perform two critical functions for your civilization: They found new cities and they serve as engineers.

Your civilization produces Settlers in the same manner as it does any other unit, with one caveat. When a Settlers unit is completed, the population of the city that produced it is reduced by one point (one citizen on the POPULATION ROSTER), representing the emigration of these pioneers. If a city has only one population point when it completes the task of building a Settlers unit, the city disappears when its population is absorbed into the new Settlers unit. This is a way to eliminate a city that is in a poor or inconvenient location.

Founding New Cities & Increasing Existing Ones

To found a new city, move a Settlers unit to the desired location and press the BUILD (⬛) key, or choose FOUND NEW CITY from the ORDERS menu. The Settlers unit disappears as the people it represents become the first population point of the new city.

The ADD TO CITY order can be used to increase the size of an existing city with less than ten population points. Move a Settlers unit into an existing city and press the BUILD (⬛) key or choose ADD TO CITY from the ORDERS menu. The Settlers unit is absorbed into the city, adding one point to its population.

Settler Engineers

Settlers, acting as engineers, can make a number of agricultural and industrial improvements to your civilization's topography. Each task takes a certain number of turns to complete, depending on the terrain being improved. Some improvements can only be undertaken after your civilization has acquired certain technologies.

There is no limit to the number of times your Settlers can engineer new improvements on any given terrain square—if the changing needs of your civilization demand clearing, irrigation, reforestation, clearing, detoxification, and reforestation in succession, the land can take it. If an option is grayed out on the ORDERS menu, that task cannot be accomplished at this time. Perhaps undertaking another improvement will make the desired option available in the future. For instance, a Plain square surrounded by Forest has no access to water and cannot be irrigated. You'll need to clear at least one of the adjacent Forests (one that shares a side with the target square) and irrigate it, before irrigation becomes available to the target square.

We've extracted all the variations into a table which lists the task, the shortcut key, the required advance, if any, and the terrains which benefit from this improvement. Full explanations of each activity appear after the table.

Task	Shortcut Key	Required Advance	Terrains that Benefit
Irrigating	Ⓘ		Desert, Grassland, Hill, Plain, River
Clearing	Ⓘ		Forest, Jungle, Swamp
Fortifying	Ⓕ	Construction	Any Land Square
Mining	Ⓜ		Desert, Hill, Mountain
Reforesting	Ⓜ		Grassland, Jungle, Plain, Swamp
Detoxifying	Ⓚ		Any Polluted Land Square
Pillaging	Ⓟ		Any Improved Land Square
Roadbuilding	Ⓡ		Any Land Square
Tracklaying	Ⓡ	Railroad	Any Road Square

Irrigating

Depending on the form of government employed by your civilization, irrigation can improve the agricultural production of a city's relatively level terrain. A square can be irrigated if it shares one side with a source of water (Ocean or River square) or another irrigated square (diagonal doesn't count). Although your city square might be irrigated when the city is founded, it does not count as a source of water for further irrigation. Sometimes you might find it necessary to irrigate squares to which your city has no access, in order to extend irrigation into squares the city uses. When your Settlers unit is positioned in the appropriate terrain square, choose the BUILD IRRIGATION option on the ORDERS menu or press the [I] key.

Clearing

Clearing terrain improves the movement point cost of dense terrain (although it eliminates the defensive bonus), and provides land suitable to further improvement through irrigation or reforestation. Sometimes a terrain square might need to be cleared to allow for irrigation access, and later reforested to restore valuable resources. When your Settlers unit is positioned in the appropriate terrain square, choose the CHANGE TO GRASSLAND (sometimes CHANGE TO PLAIN) option on the ORDERS menu or press the [I] key.

Fortifying

Building fortifications can be essential for defense of terrain that is not a city site. Fortifications provides defensive benefits to rural or frontier units in the same way the City Walls improvement benefits urban defensive units (see **Combat** for the full details). When your Settlers unit is positioned in the appropriate terrain square, choose the BUILD FORTRESS option on the ORDERS menu or press the [F] key.

Mining

Mining terrain allows full utilization of the natural resources present. It is especially useful in special terrain like Coal and Gold. When your Settlers unit is positioned in the appropriate terrain square, choose the BUILD MINE option on the ORDERS menu or press the [M] key.

Reforesting

Reforestation improves the resource production of most terrain (though it increases the movement point cost of open terrain if there is no road or railroad through the square). Reforesting Plain and Grassland squares also improves their defensive bonus. When your Settlers unit is positioned in the appropriate terrain square, choose the CHANGE TO FOREST option on the ORDERS menu or press the Ⓜ key.

Detoxifying

Cleaning up pollution by detoxifying squares restores the full (pre-pollution) production capacity to the affected squares. A long-term benefit of detoxification is the reduced chance of global warming, which might otherwise occur (see **Terrain & Movement** for details). Both industrial pollution and nuclear contamination can be eliminated by detoxification. When your Settlers unit is positioned in the appropriate terrain square, choose the CLEAN UP POLLUTION option on the ORDERS menu or press the Ⓚ key.

Pillaging

On enemy soil, this task is called pillage; on friendly soil, it is "urban renewal". Pillaging entirely removes one improvement from a terrain square. Railroads are targeted first, if they exist, followed by roads, then irrigation, and finally mines. Pillage can be used to close mines or remove railroads which you have decided are misplaced. When your Settlers unit is positioned in the appropriate terrain square, choose the PILLAGE option on the ORDERS menu or press the Ⓟ key.

Roadbuilding

Building roads across terrain reduces the movement point cost of that square. Depending on the form of government under which you civilization operates, it can also improve the trading production of the square. Roads are the foundations for railroads. When your Settlers unit is positioned in the appropriate terrain square, choose the BUILD ROAD option on the ORDERS menu or press the Ⓡ key.

Tracklaying

Laying track across terrain eliminates the movement point cost of that square (although your units must still pay one-third of a movement point to enter each city square). Railroads also increase resource production by 50 percent, rounded down—that is, they allow workers to produce a third icon for every two of one kind of resource. You can only lay track where you have already built roads. When your Settlers unit is positioned in the appropriate terrain square, choose the BUILD RAILROAD option on the ORDERS menu or press the Ⓡ key.

Creating Smart Settlers

This option lets you automate a Settlers unit's work. You can either give a unit a series of improvement tasks or direct it to connect its home city to another with a road. Smart Settlers only improve terrain within the radius of their home city. They modify the easiest terrain first, and if your instructions include building roads, they accomplish that task first of all (because terrain with roads is easier to travel across). If an enemy unit enters a Smart Settlers unit's zone of control, the Settlers unit breaks off its task and retreats from contact. You can reset the unit once the threat has been resolved.

Choose the Intercity Highway option to build roads from the Smart Settlers' current location to any friendly city. Select the destination city from a list of all of your cities. Smart Settlers cannot connect cities on different continents. Smart Settlers cannot build highways across River squares until your civilization discovers the Bridge Building advance.

Barbarians are small tribes of raiders that are not part of any opposing civilization. They are always red units. You might encounter them periodically as your civilization begins to expand and grow. They sometimes invade from the sea; other times they arise suddenly in unsettled parts of any continent. Barbarians might attempt to capture or destroy your cities, and pillage your fields and mines. Most barbarian tribes are accompanied by a leader who looks like a Diplomat unit.

Because barbarians can appear along any coast or in any unsettled area, it is important to defend your cities with at least one military unit. Barbarians (and rival armies) can walk right into an undefended city, capturing it with only minor bloodshed (the captured city loses one population point, just as any city taken by force does—see **Capturing Cities** under **Cities** for the gory details).

Sea Raiders

Barbarians that invade from the sea are looking for a place to settle. They search for cities and attempt to capture them. They do not pillage their target city's mines and irrigation because of their interest in making a permanent settlement. If they capture a city, they take it over and begin producing more units to make new assaults (the city square turns red to indicate that it is now a barbarian stronghold). Even if barbarians capture a city or several cities, they do not become a rival civilization—that is, they do not join the space race, or negotiate treaties, or earn rank in historians' reckonings. Sea raiders can be fought on land or engaged at sea in their ships.

BARBARIANS

Land Barbarians

These raiders are interested only in loot, not permanent settlements. Unlike sea raiders, they pillage any mines or irrigation they encounter. If they capture one of your cities, they utterly destroy it (and any Wonders of the World that were built there).

Land barbarians arise in areas that are outside the radius of a city. As time passes, they appear at even farther distances from civilization. Thus, expanding your network of cities over a continent eventually removes the threat of land barbarians, because the entire area has become more or less civilized by your urban presence.

Ransoming Barbarian Leaders

When you attack and destroy stacked barbarian units, the leader units fall with their troops and are also destroyed. However, if a barbarian leader (red Diplomat unit) stands alone in a square, and your army wins an attack against him, he is captured. His compatriots immediately give you 100 coins ransom. Barbarian leaders who have lost their armies attempt to escape. If not captured in a few turns, they disappear.

DISASTERS
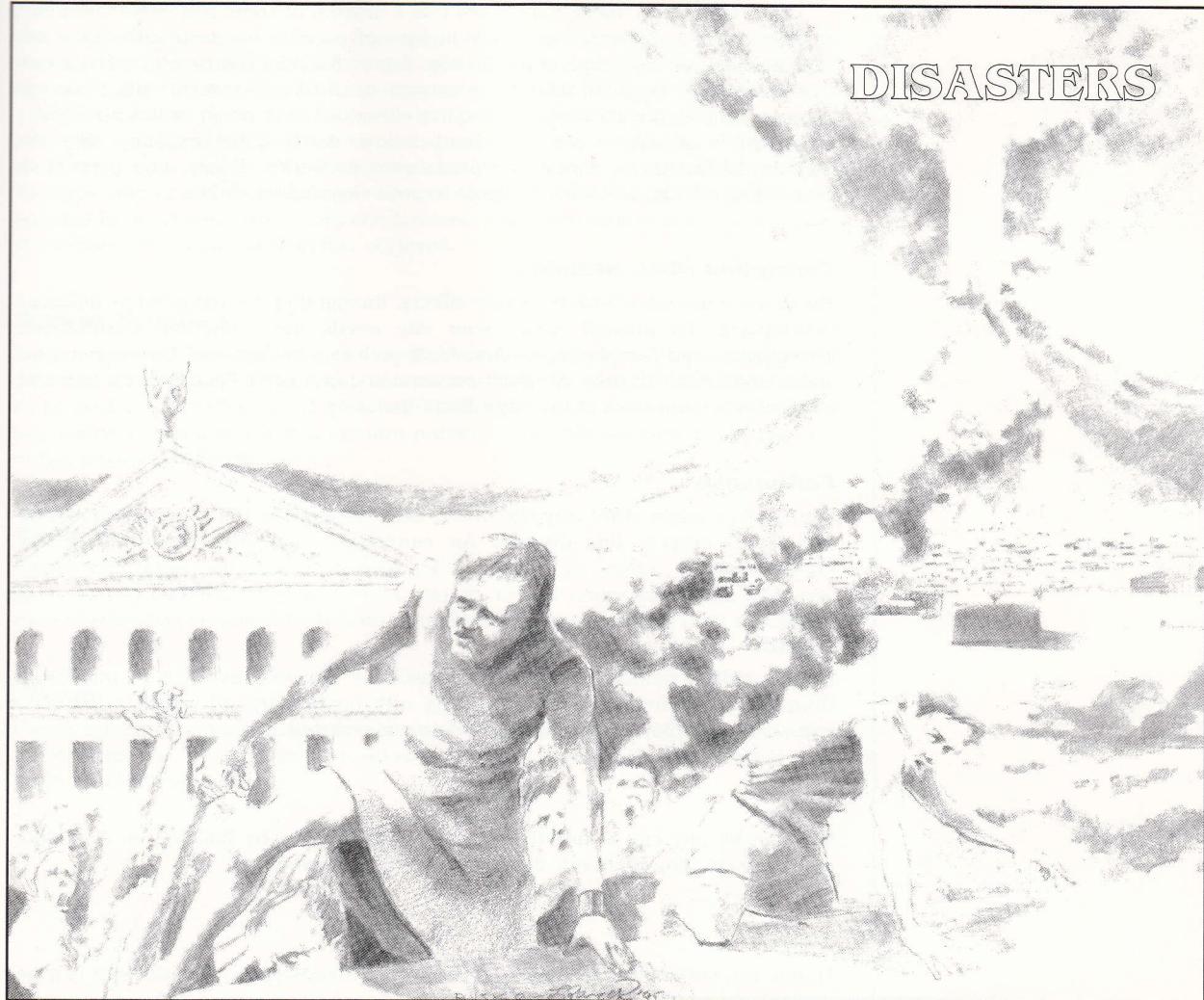
Each game turn, there is a chance that a disaster of some sort might strike one of your cities. A disaster can result in loss of population, destruction of a city improvement, or disruption of production. Some disasters can be prevented if your civilization has acquired certain advances or if the city has built a certain improvement. In these cases, the disaster either does not occur or has no effect.

Possible disasters are described below. Each entry explains why the catastrophe occurs (if a reason exists), what measures, if any, can prevent its devastating effects, and what happens to your city when it strikes.

Corruption (Riot, Scandal)

These three disasters have the same effects, though they are triggered by different deficiencies. To prevent them, your city needs the Cathedral, Courthouse, Marketplace, and Temple improvements, as well as a low tax rate. Corruption, riot, and scandal each destroy all wheat accumulated in a city's FOOD STORAGE box and all shields accumulated in the city's PRODUCTION box.

Earthquake

Earthquakes might strike any city that is built adjacent to Hill terrain. You can do nothing to prevent this disaster. An earthquake randomly destroys one city improvement.

Famine

Famine strikes randomly. Famine's devastation can be prevented by building a Granary improvement. If it strikes a city with no Granary, all wheat in the FOOD STORAGE box is lost and the city's population is reduced.

Fire

Fire can hit any city at any time. It can be prevented by building an Aqueduct improvement. Fire randomly destroys one city improvement.

Flood

Floods can strike any city built next to or on a River square. This disaster can be prevented by building a City Walls improvement. A flood reduces city population.

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Global Warming

The continuing presence of more than nine polluted terrain squares—anywhere in the world—raises the possibility that global warming might occur. When it happens, this disaster can cause extensive geographic changes throughout the world. It can be prevented (at least, the possibility of its occurrence can be reduced) by detoxifying polluted terrain squares as soon as they appear. If global warming occurs, Desert, Plain, and Grassland squares on coasts might become Swamps, and coastal Forests might become Jungles. Plain, Grassland, and Forest squares in the interior might become Deserts. Your environmental advisors report immediately if global warming has occurred.

Nuclear Meltdown

A nuclear meltdown might occur in any Nuclear Power Plant in a city suffering civil disorder. A meltdown can be prevented by acquiring the advance of Fusion Power, or by avoiding civil disorder. If a Nuclear Power Plant melts down, half of the city's population is destroyed and a random number of terrain squares within the city radius become polluted.

Pirate Raid

Pirates can strike any city built adjacent to an Ocean square. Pirates can be prevented by building a Barracks improvement. Pirates remove all wheat from the FOOD STORAGE box and all shields from the PRODUCTION box, resetting both to zero.

Plague

Plague can strike any city at any time. It can be prevented by acquiring the advance of Medicine or by building an Aqueduct improvement. Plague reduces the city's population.

Schism

This disaster only happens to computer players, but its consequences can be far-reaching. An AI-controlled civilization might suffer a civil war if you capture its capital city. No improvements or Wonders can prevent this disaster. If you capture the capital city of a civilization with more cities than you have, there is a chance that you precipitate a civil war. Approximately half of their cities form a schism that joins forms a new civilization.

Volcanic Eruption

A volcano might erupt and damage any city built adjacent to or on Mountain terrain. The effects of an eruption can be negated by building a Temple improvement in the city. A volcanic eruption in a city without a Temple reduces the city's population.

DIPLOMACY

Other cultures share your world in *CivNet*. If your attitude is expansionist, and your home continent is large, you might seek out—and find—your rivals early in the game. If you concentrate on perfecting your own cities or find yourself limited by a small continent, it might be centuries before you encounter other players. Whether you opt for peaceful communications or aggressive action depends on your style.

CONCEPTS OF DIPLOMACY

Eventually, no matter how isolated your location or how isolationist your policies, you will have contact with rival civilizations. Choosing to meet with a rival allows you to explore the intricacies of negotiation.

Every player, including the AI opponents, has an attitude that he or she presents to negotiators. Your rivals' attitudes can range from friendly to inimical. You can tell what attitude a leader has by watching the expression on the leader's face after he or she stops speaking. A ruler's personality affects his or her attitude. Your rivals' attitudes can change over time, depending on your rank in the game: If you are way ahead, everyone else, whether human or AI, is likely to be less friendly to you.

Diplomatic negotiations can involve four different things: money, advances, peace, or war. A rival might demand money or civilization advances (the reverse is also true—you can demand money or civilization advances from rival rulers). A rival can offer to make peace, or confirm an already peaceful relationship (again, you can make the same offers to your opponents). A player might even ask you to declare war on a third party. In a single-player game or when you are dealing with AI players during multiplayer games, all negotiations progress through a series of screens, each with several pre-set options.

Establishing embassies in your rivals' cities allows you to increase your negotiating power. By checking your intelligence reports, you can see whether, for example, the bellicose Indians have the military strength to back up their threats, or whether they are just bluffing. You'll have a better idea of when to back down, and when to press for concessions.

YOUR RIVAL'S CABINETS

The number and costume of the cabinet of advisors that appear behind rival rulers are intended to indicate the relative size and type of government employed by the enemy civilization. A ruler with four advisors is one of the largest in the world. A rival with only one advisor leads a very small civilization. The advisors' "national" costume indicates that civilization's type of government as described below.

Mongols: Ancient Despotism/Anarchy
Egyptians: Ancient Monarchy
Greeks: Ancient Republic/Democracy
Hoodlums: Modern Despotism/Anarchy
English: Modern Monarchy
Russians: Communism
Americans: Modern Republic/Democracy

Diplomacy is conducted face to face with one rival ruler at a time. An opponent can contact you any time after units from each of your civilizations have met, and the reverse is also true. You can contact an opponent any time after your units have been adjacent to his or hers. Just select the option MEET WITH A KING from the MULTIPLAYER menu (even if you're playing a single-person game).

In game terms, once you choose the MEET WITH A KING option a dialog box opens, offering you several responses from which to select your intent. The form of government under which your civilization currently operates can influence the choices you must make; see **Governments** for the details.

All negotiations with AI opponents end with either an agreement of peace or a declaration of war. Even the most antagonistic rival might concede peace for a suitable payment of cash or technology. However, a dearly purchased peace is likely to be temporary.

Establishing embassies with other civilizations can be a very useful preparation for negotiations. Your Intelligence Advisor collects information from all of your embassies. From him you can learn important facts about your opponents, including their size and the personalities of their leaders. This information is not available for civilizations with which you have not established an embassy.

The tone and result of any negotiations are greatly influenced by the mood of your rival. The opposing leader might be antagonistic, obsequious, or somewhere in between. This mood depends on the leader's personality and how your two civilizations compare to each other and to the rest of the world. You might pick up cues about a rival's mood from the facial expressions of the animation or from background music.

A rival leader's personality might be aggressive, friendly, or neutral. Aggressive leaders are more likely to lean toward war or demand high payments for peace. Friendly leaders are more likely to offer peace and might only be bluffing when asking for payment. If you have broken previous peace agreements with a civilization, your perfidy is remembered and influences their degree of antagonism.

If you are the largest, most powerful, and richest civilization in the world, all rivals are likely to be very demanding or antagonistic. However, if a particular opponent is puny in comparison to your might, his or her natural tendency to belligerence might be overridden. A civilization threatened with extinction is more interested in survival.

DIPLOMACY WITH COMPUTER OPPONENTS

MOOD AND PERSONALITY

Trading Civilization Advances

Civilizations that are not extremely antagonistic might offer to trade civilization advances. They begin by offering one advance you don't possess, although they might actually have several you lack. If you agree, a menu of the technologies they can trade appears. Select the one you want and then they will take one from you. You have no choice regarding what they take and cannot veto the trade. You may continue trading as many technologies as you possess, provided the other party is interested.

Tribute

During negotiations, a rival might demand tribute in the form of a cash payment or a civilization advance. If you meet this demand, the rival almost certainly agrees to peace. If you reject the demand, an antagonistic rival generally declares war. The demands of a more peaceful or threatened rival might be only a bluff; if you reject extortionate requests, they might offer peace anyway. In some cases, a rival offers a reward for you to make peace or declare war on another civilization.

Post-Treaty Negotiations

Once you agree to a peace treaty, you have an opportunity for further negotiations. A menu opens offering three choices: a declaration of harmony, a military proposal, or a demand for tribute. The declaration of harmony closes negotiations on a positive note. Choose a military proposal if you want your new friends to attack a third party. Generally your allies demand a cash payment in return for rendering aggressive services—you can either pay or refuse funding. If you refuse funding, your allies won't carry out your proposal.

Your third option is to demand tribute to cement the new treaty you have signed. If your opponent is weak or in awe of your power, he might pay. Alternatively, he might refuse to offer tribute, or even go so far as to declare war on you.

Peace between your civilization and another can only result from diplomacy. When you are at peace it is much easier for trade Caravans to reach the cities of the other party and establish trade routes. When the entire world is at peace, your civilization score is increased by three points each turn.

Peace agreements can normally be broken at any time by either party, but so long as a treaty holds, both parties must adhere to the following rules:

- Units of the other civilization, even Diplomats, cannot be attacked or bribed.
- No units except Diplomats and Caravans can enter improved squares within the city radius of an allied city (squares which are irrigated, mined, or penetrated by roads).
- Terrain squares that the other party has improved cannot be pillaged.
- Civilization advances cannot be stolen from the other party.

Violating any of these rules ends the peace and triggers a war. A dialog box appears if you give an order that will break a treaty; you have the opportunity to rethink your commands.

Choosing peace is voluntary unless your government is a Republic or a Democracy. In a Republic, the Senate might or might not overrule your aggressive actions and, instead, sue for peace to placate their constituents. In a Democracy, the Senate always overrules any declaration of war and always accepts peace.

If you don't want peace, refuse to talk to the enemy. This prevents them from making an offer your Senate might force you to accept.

BREAKING THE PEACE

If your government is a Republic or a Democracy, you cannot violate a peace agreement voluntarily. The Senate overrules any action that would start a war. Rivals can break the peace either aggressively, by authorizing a surprise attack, or diplomatically, by declaring war on you.
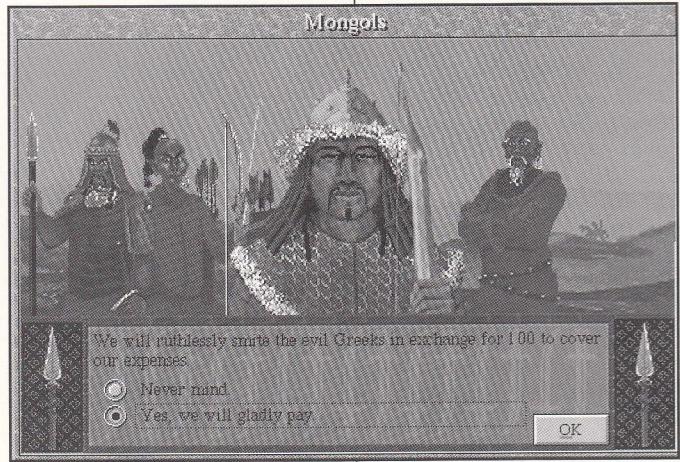
AI opponent declares war!

If you consider war necessary while your civilization is operating as a Republic or a Democracy, there are three ways you can start a fight. (Of course, you can use these techniques if your civilization follows any other form of government, too.) First, you can call a revolution (choose the REVOLUTION! option from the KINGDOM menu) to overthrow the government and install one more receptive to your wishes. As an alternative, wait for your opponent to break the peace. Finally, you can send a Diplomat (see **Diplomats** under **Mobile Units** for the details) to incite a revolt in an enemy city.

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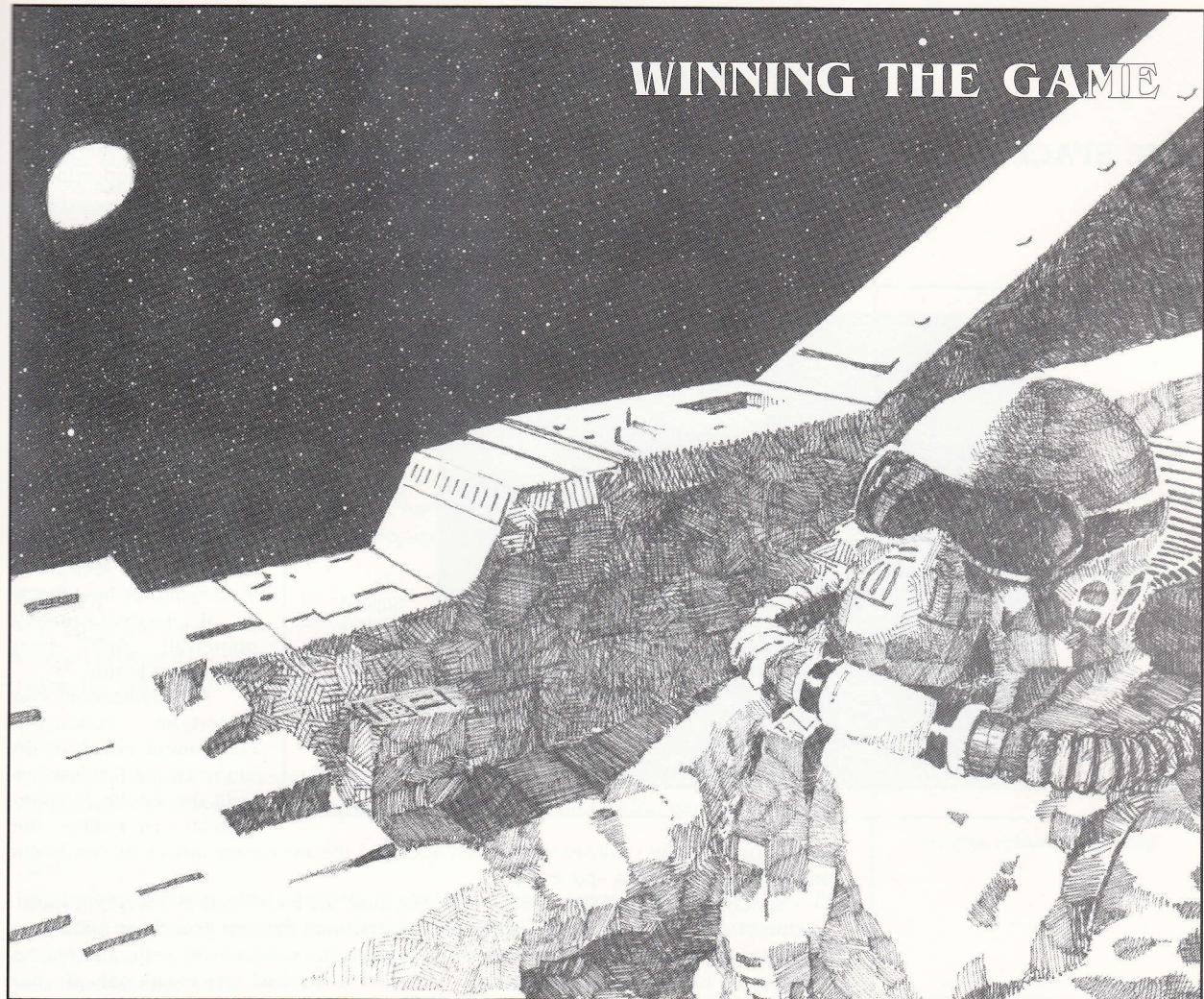
WINNING THE GAME

As we explained in the **Introduction,** there are two ways to win *CivNet*. You can either beat the other civilizations into space by being the first to successfully colonize a distant system, or conquer all the other civilizations in the game.

THE SPACE RACE

The environmental pressures of growing populations in the modern world are forcing humans to look into space for resources and room to live. The question is not whether humans will travel to the stars, but when. The final act of stewardship you can perform for your civilization is to ensure that they lead this exodus.

Spaceship construction under way!

The history of your civilization ends when either you or one of your rivals reaches a nearby star system with colonists. If your spaceship is the first to arrive, you receive a bonus to your civilization score in recognition of this final accomplishment. Regardless of how many colonists your spaceship is carrying, or how fast it is, if a rival makes planetfall first, you receive no bonus.

No civilization can undertake spaceship component construction until one civilization has built the Apollo Program Wonder. Thereafter, the race is on and any civilization that has acquired the necessary advances can begin building the parts of a spaceship.

Spaceships are in many ways a one-shot deal. Each civilization, including yours, can build only one spaceship at a time. Restrictions prevent you from building a second, back-up ship once you launch the first. Once launched, ships cannot be recalled or turned around. You can construct a second spaceship only if your current ship explodes in space or if your capital city is captured while your spaceship is under construction (the conquerors burn it on the launch pad).

Spaceships

The purpose of your spaceship is to carry as many colonists as possible to another star system. As a minimum, it must provide living space for colonists, life support, energy sources, propulsion power, and fuel for the engines. Spending more time constructing additional components can result in a faster voyage and a higher colonist survival rate.

As each new component is completed, the SPACESHIP display appears, showing where the component is positioned and updating the statistics and specifications. All spaceships have the same characteristics: population, food, energy, mass, fuel, flight time, and probability of success. We'll explain each in turn.

Population

This figure represents the number of pioneers the spaceship is outfitted to carry. The more citizens it carries to the new planet, the higher your bonus.

Support

This figure shows what percentage of accommodations on the ship is currently serviced by life support: air, nutrient, and waste systems. Pioneers not provided with life support cannot survive the voyage.

Energy

This figure indicates what percentage of the energy required by habitation and life support modules is currently being provided. If sufficient energy is not available to power life support and habitation, the probability of success will be very low.

Mass

All of the components, modules, and structures add to the mass of your spaceship. The greater the mass, the more power is required from propulsion parts to move it.

Fuel

This figure indicates what percentage of the fuel your propulsion units require is currently aboard. If insufficient fuel is provided, the propulsion components aboard cannot work to their maximum power and the ship cannot attain its best possible speed.

Flight Time

This calculation indicates the number of years required for your spaceship to reach the nearest star, based on the ship's current mass and engine power. Adding more engines and fuel reduces flight time.

Probability of Success

This figure incorporates all the other data, including the amount of food and energy available and the estimated flight time, in an estimate of the approximate percentage of colonists who are expected to survive the voyage. The faster the flight, the higher the expected survival rate.

Space Ship Launch

To send your spaceship on its voyage, click on the LAUNCH button at the bottom right of the SPACESHIP display. You cannot retrieve a spaceship once it has been launched.

Construction

Your spaceship is such a large undertaking that it cannot be built "whole cloth" the way improvements are built—it is instead constructed of parts. There are three types of spaceship parts: components, modules, and structures, each of which we describe in detail below. You must achieve a new civilization advance to make each type of part available for construction. However, the delivery of spaceship parts to your capital city is handled automatically as each part is completed.

Though you can construct parts in any order, and most likely will have multiple parts under production simultaneously, all modules and components must eventually be connected to structural parts—if you want them to function. Unconnected modules or components are outlined in red to signal that they are not working. Once sufficient structural parts have been added to provide supply and support lines, the red outlines disappear.

Components

To build spaceship components you must have achieved the technological advance of Plastics. You can then build components at a cost of 160 shields each. There are two kinds of components, propulsion and fuel. As each component is completed, you choose which type has been built.

Propulsion Components: These parts are the engines that provide the power for space flight. More engines mean the ship travels faster, reaches its destination sooner, and has a higher probability of a successful mission.

Fuel Components: These parts provide fuel for the propulsion units. In order for the propulsion units to perform at maximum levels, you must provide one fuel component for each propulsion component.

Modules

Spaceship modules require the advance of Robotics and cost 320 shields each to build. They exist in three types: habitation, life support, and solar panels. As each module is completed, you choose which type it is and add it to your ship.

Habitation Module: Each habitation module provides living space, community services, and recreational facilities for 10,000 colonists.

Life Support Module: Each life support module provides the food and other requirements for the 10,000 colonists carried in one habitation module. People carried in a habitation module that doesn't receive life support have a very low probability of surviving.

Solar Panel Module: Each solar panel module provides enough energy to power two of the other types of module. Modules that don't receive power cannot function properly.

Structural Support

Structural units require the advance of Space Flight and cost 80 shields each to build. You must build sufficient structural units to connect the components and modules together. Parts that are not connected do not work and provide no benefit to the ship.

To achieve this end, aggressiveness helps. Your object is to take over any and all rival civilizations. Note that if you vanquish other players (either human or AI) early enough in the game, some minor tribe might develop a Settlers unit and found a new civilization using the color originally assigned to the vanquished culture. In this way, some civilizations "restart." Eventually, if you're lucky, you might be able to subjugate the entire world. At any time that you manage to control the only settled civilization, you win, and the End Game sequence proclaims you the ruler of the world.

CONQUERING THE WORLD

SCORING

Completing a *CivNet* game can take many hours, especially if you are playing against accomplished human rivals. There are several ways to get a general idea of how you're doing along the way.

Palace

In the PALACE window at the top of the STATUS window, a miniature palace view shows you the current aspect of your residence. Click on this box to see an enlarged view. As your civilization achieves certain milestones, some of which are keyed to numbers and sizes of cities, attitude of population, and civilization advances, your citizens spontaneously show their approval—first by building and subsequently by making additions to your palace. Periodic reports notify you of these events.

Your palace not only reflects the recognition of your people, it defines your style.

Do you have to build your palace? No. If you choose to live among your people in anonymity or you feel the time for self-aggrandizement has not yet come, you can do so. When the citizens offer to add to your palace, the PALACE BUILDING screen appears. Just click on the close button in the upper left corner of the window. The PALACE BUILDING screen disappears, and you can go on about your business of civilizing the world. You can also avoid the periodic offers by toggling off the PALACES option in the OPTIONS menu.

However, if you'd like to work on your palace, take note of the number of sections you can build, which is listed in the dialog box, and then click the OK button. Raised buttons appear over sections of your palace, indicating the areas on which you can improve. Each improvement is built separately. If you can undertake three sections at this time, you'll see this button screen three times. As your palace gets larger, more areas are open to improvement. In addition to improving the building, you can landscape the approach (road surface and margins).

Once you've chosen an area to improve, you are offered a further choice of styles. Does your favorite architecture feature onion domes, crenelated turrets, pillared colonnades—or a mixture of all three? Each architectural section can be elaborated four times, and you can switch styles (from columns to arches to plain stone) up to the last elaboration.

Demographics

This option, available on the WORLD menu, gives a number of "real world" statistics about your civilization's health, growth, economic, and military status. Each measure shows both an actual value and your rank among the world's civilizations. If you have established an embassy with the nation that is top-ranked in a particular measure, your rival's achievement is listed in parentheses after your own ranking. You can use the DEMOGRAPHICS report to compare your performance with that of your rivals and to determine what areas of your civilization need the most immediate attention.

Chinese Demographics		
Approval Rating:	46%	2nd
Population:	300,000	2nd
GNP:	5 million @	4th
Mfg. Goods:	16 Mtons	2nd
Land Area:	47,000 sq. miles	2nd
Literacy:	32%	1st
Disease:	26%	1st
Pollution:	None	1st
Life Expectancy:	32 years	2nd
Family Size:	3.5 children	6th
Military Service:	6 years	4th
Annual Income:	4@ per capita	5th
Productivity:	43	5th

Demographics screen

CIV NET

Civilization Score

If you're the type who likes the concreteness of numbers, choose the CIVILIZATION SCORE option from the WORLD menu for a numerical representation of your progress. *CivNet* keeps a running total of points you've earned for population size and various achievements. It also keeps track of penalties for pollution.

Your ultimate goal—a challenging one—is to score 1,000 points or more. If you conquer the world before the last year of the game (as early as 2020 AD when you are playing at Emperor level or as late as 2100 AD at Chieftain level), *CivNet* calculates an alternate score, based on the number of rivals you've squelched and the speed with which you moved. You can earn up to 1,000 points for conquered cultures, and nearly as much for speed. *CivNet* compares this alternate score to your running total and awards you the higher point value of the two.

If you successfully settle the stars, you earn a bonus based on the number of colonists to reach Alpha Centauri. This bonus is added to your running total score when you complete your mission.

Condition	Points Scored
Each happy citizen	2
Each content citizen	1
Each Wonder of the World that you possess	20
Each turn of world peace (no wars)	3
Each futuristic advance	5
Each map square currently polluted	-10

At the bottom of the report, a bar graph indicates how far you have progressed.

CREATING YOUR OWN WORLDS

CivNet offers a number of map options to keep the worlds you civilize fresh; undoubtedly the most popular of these is **CivMap**, the map editor. With this tool, you can create your own maps, adjusting the sizes and shapes of the continents, the type and extent of the terrain, and the scarcity or abundance of ideal city sites.

There is one caveat to use of the map editor. It is possible for a custom-drawn map to violate the "legal" map conventions that CivNet needs to run a successful game. For instance, make sure you include sufficient Plain, Grassland, or River squares that each civilization has at least one potential city site. You should have at least one ocean and preferably more than one continent. An "illegal" map might cause serious game problems.

You can access **CivMap** from the CivNet group by double-clicking on the **CivMap** icon. (If you don't like the default icon, you can assign a different icon to the map editor—see the **Technical Supplement** for full details.)

Once you're in the map editor, you have a couple of screens, a tool box, and a few menus that let you create your own worlds. Each component is described below.
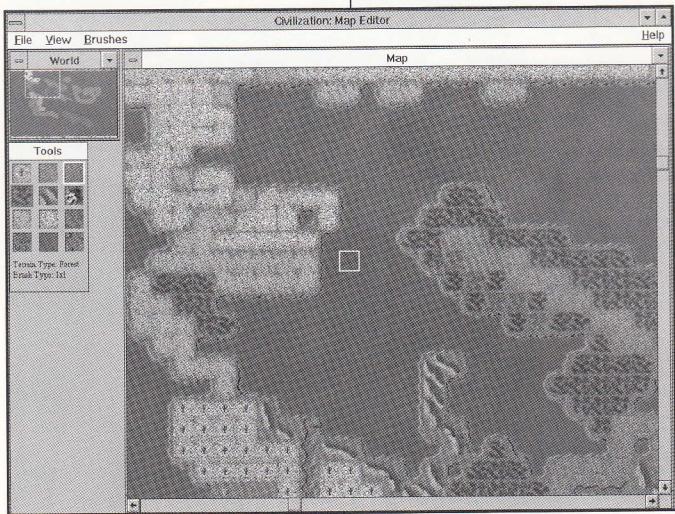
A new world is born.

WHAT YOU SEE

The main features of the map editor are the WORLD and MAP windows and the TOOLS palette.

World Window

This window shows you the entire map in miniature. Click anywhere in this window to rapidly center the MAP window on the spot. The WORLD window can be sized, like most windows, by clicking on a side or corner of the frame and dragging it to the dimensions you like.

Map Window

This window shows a close-up view of one area of the map. It is here that you apply brushes to create terrain. You can either click to apply a terrain type to a single area (the size and shape of which depend on your brush), or click and drag to cover larger areas. The MAP window can be sized, like most windows, by clicking on a side or corner of the frame and dragging it to the dimensions you like. A large MAP window is most useful for creating detailed continents.

Tools

This palette includes all of the basic terrain squares available in CIVNET. The terrain type outlined in red is applied whenever you click; the terrain type outlined in white is applied whenever you right-click. Text at the bottom of the tool box reminds you of the name of the terrain square laid down by the left mouse button and of the particular brush you are using (see **Brushes** for details.) River and Grassland squares each have two different resources configurations—with and without shield icons. As you lay down terrain, CivMap determines which configuration to use. However, special terrain squares are not assigned until CIVNET generates the world at the start of a game session. Therefore, you cannot determine the location of special terrain squares in **CivMap**.

You can choose different terrain types by clicking or right-clicking on them in the tool palette. Experiment to see if you prefer to lay two different land types or if, for instance, you'd rather keep the right mouse button highlighting Ocean, as an eraser.

CivMap has three pull-down menus, which contain a variety of options.

File

This menu allows you to access files you've already created or save your new map masterwork.

Open

Choose this option to open a map file you've worked on and saved or to retrieve a map from a game you particularly like. Files with the extension **.map** are world maps. You can also click on any saved game (a file with the extension **.sav**), and **CivMap** will extract the map for you.

MENU BAR

Save

Once you are satisfied with a map you've made, use this option to save it. File names are limited to the DOS naming conventions (no more than eight letters or numbers, and no punctuation or spaces), and must end in the extension **.map**.

Options

Here you can choose to turn color cycling on or off (this includes twinkling rivers and waves breaking on shore) and the map fizzle (the puzzle-like way the map dissolves when you move around the WORLD window). If your computer is not very powerful, turning these options off might speed up its response time.

Generate Earth

Choose this option to start with a map of Earth. Once **CivMap** has generated the world for you, you can terraform new continents, reforest the Sahara, or effect any geographical changes your heart desires.

Generate Random World

When you choose this option, **CivMap** creates a random collection of continents and islands, which you can further modify as you see fit.

Generate Blank World

If you'd rather start completely fresh, choose this option to generate a map devoid of any terrain but ocean.

Quit

When you're finished terraforming new worlds, choose this option to return to the *CivNet* group. You'll be warned if you haven't saved your work.

View

Just as in *CivNet*, you can adjust the degree of enlargement in the MAP window. Use the zoom controls to make the image the ideal size for you. **CivMap** will store the settings you choose and start at those settings the next time you use it.

Zoom In

This option increases the size of the squares shown in the Map window, resulting in a close-up view. The maximum zoom level is four steps closer than the normal view.

Zoom Out

This option decreases the size of the squares shown in the Map window, resulting in a wider view. The minimum zoom level is four steps wider than the normal view.

Zoom Level Max

This option increases the size of the squares shown in the Map window to the maximum level in one step.

Zoom Level Normal

This option returns the terrain squares in the Map window to the default size.

Zoom Level Min

This option decreases the size of the squares shown in the Map window to the minimum level in one step.

Brushes

This menu gives you options for how much territory you can cover at one time. You can meticulously place each terrain square or drag the mouse in sweeping gestures across the planet. All squares painted with a particular brush are painted in the same terrain, although if you choose the Grassland or River terrain types, the program randomly assigns extra resources to some squares as it paints.

1 X 1

For detailed work, this brush lays down one terrain square at a time.

3 X 3

When you need to cover a little more ground, choose this brush to lay down a block of terrain three squares long and three squares wide.

5 X 5

This brush allows you to lay down a block of terrain five squares long by five squares wide.

Diamond

This brush lays terrain in a diamond shape instead of a square. The widest part of the diamond is three squares across.

City Box

This brush creates terrain in the shape of a city radius.
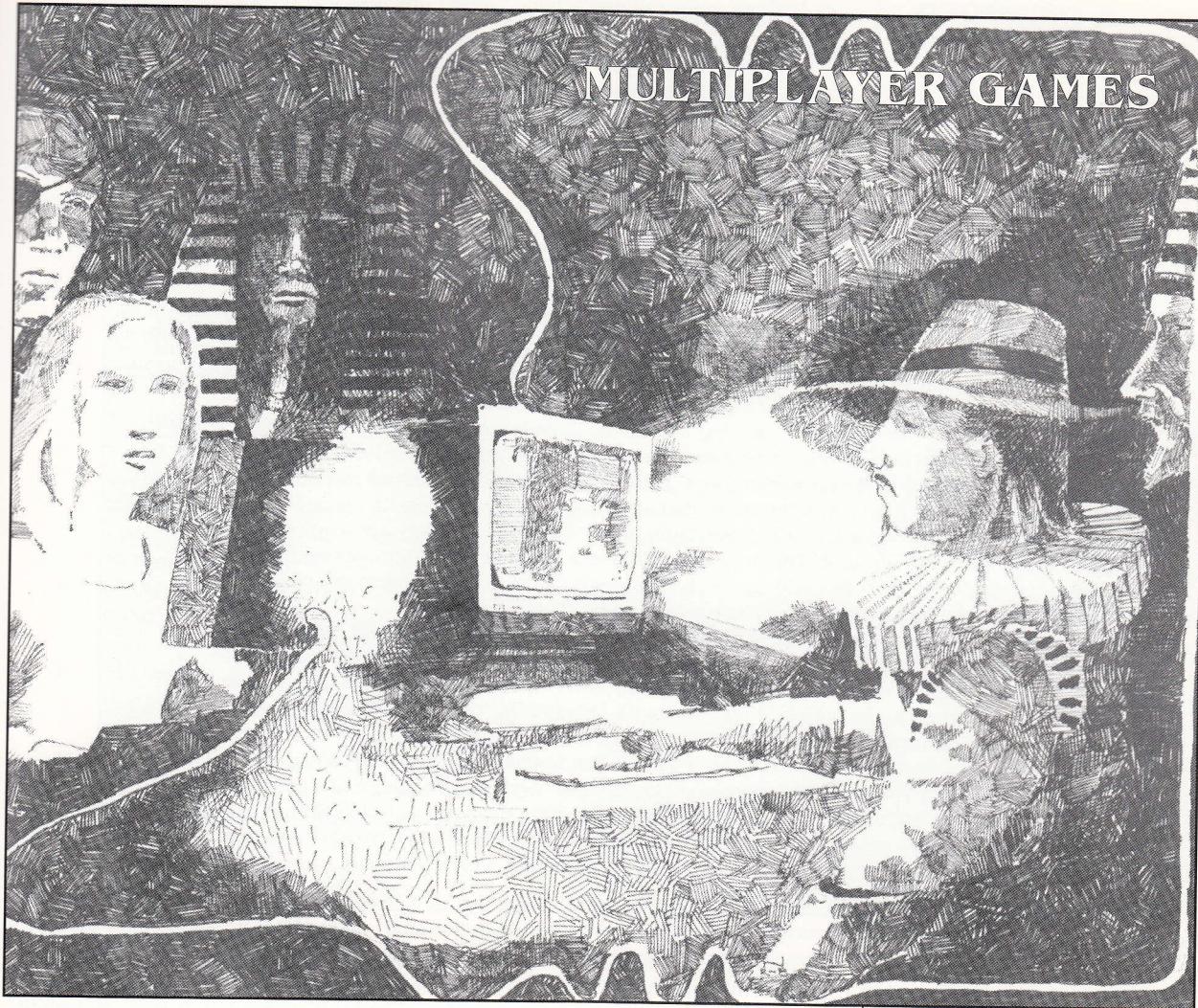
CIVNET allows you to compete against human players instead of computer-controlled opponents (artificial intelligences, or AI). The big thing to remember here is that your opponents are living beings; they react in unique and sometimes incomprehensible ways, and most of the time they are different from AI players. Another important point (of etiquette) is to limit the time you keep all the other players waiting. Read your messages quickly, finish your turn promptly, and do not agonize over trying to maximize the benefit from every decision you have to make ("minimaxing").

MULTIPLAYER GAME CONCEPTS

A saved game is a saved game. Any saved game can be continued in any mode: single player, hotseat, head-to-head, or multiplayer. You can load the saved game you played last night on the internet and continue it single-player over lunch. You can later take your laptop to your beach house and continue the same game in hotseat mode. Flexibility is our goal.

The SIMULTANEOUS MOVEMENT option is a big new thing. In order to make simultaneous play possible, **CIVNET** divides each turn into phases. The *movement phase* begins each turn, and the *production phase* follows it. When you set up a game, you can choose whether all players move their pieces at the same time (simultaneous movement), or each player moves his or her pieces in sequence (turn-based movement). In either system, when battles arise, they are resolved on the spot; this is the movement phase. The production phase is the time that improvements, units, and Wonders are completed, attitudes and research efforts are calculated, and taxes are collected. In a multiplayer game, each player gets the chance to read his or her reports.

A new movement phase cannot begin until all players have finished reading their reports. To keep games fun, multiplayer game turns have several time limit options. The originating player can set a limit on the number of minutes a turn takes and also on the number of minutes the last player has to move. Once time limits are set, they cannot be changed for that game session. If you exceed the time limit on your turn, **CIVNET** automatically moves on to the next player's turn.

Sometimes, new cultures form. If you're a *Civilization* fan, you might have noticed that opponents you thought you had eliminated sometimes come back (as another culture with the same color units). If you are eliminated from a multiplayer game, you might be able to rejoin it playing another culture. It is also possible to "steal" another player's civilization by choosing it instead of your own when you reload a game—if they have not protected it with a password.

As we mentioned earlier, **CIVNET** gives you a wide choice of opponent options. We'll explain all the details here. As usual, each screen has an OK button to confirm your choice and a CANCEL or GO BACK button if you make a mistake or change your mind.

The Multiplayer Setup screen is where you choose what communication method to use for your multiplayer game.

- Click the Network Game option if you're playing on a local area network, or LAN. Many workplaces have LANs, and some households are also using them to link PCs. You can start up a new game or join a game in progress (if there is an open civilization slot). Network play assumes that communications are already active, so you can skip the instructions in **Initiating Communications**.

- If you want to play *CivNet* head-to-head over a modem connection (by phone) or through a null-modem cable that links two computers directly, the Head-to-Head option is for you. In this case, you must initiate communications before you can begin setting up the game.

- If you're going to play on a wide area network (WAN) or the Internet, choose Internet. You must be connected to the WAN or the Internet *before* you run *CivNet*, so you can skip the instructions in **Initiating Communications**.

- If you only have one PC, but you've invited a party of friends for the evening and want to play *CivNet*, choose Hotseat. When each player has completed a turn, he or she yields control (the "hotseat") to the next player. You can skip all of the following instructions and go straight to the **Hotseat** section.

- If you want to play *CivNet* over a bulletin board system (BBS), choose the Game Connection Protocol option. In this case, you must initiate communications before you can begin setting up the game.

- Clicking the Total Entertainment Network (TEN) option connects directly to that network. (Note that this option is enabled only in certain versions of the game.)

If you don't want to play a multiplayer game, but you somehow ended up at this screen accidentally, click the Cancel button to go back to the introductory screen.

When you're satisfied with your choice, click the OK button to proceed.

Before you can play head to head (over a modem or a null-modem cable) or over a remote connection to a BBS, you must initiate communications between your computer and another one—your opponent's or the remote host. The procedures for these two types of connection are practically identical—to a point. Once you're connected, there's an extra step for BBS players.

Please note that the following instructions do not apply if you are playing on a network or the Internet. You must connect to networks *before* you start **CivNet**; these communications procedures are for those connections you initiate *after* **CivNet** is running.

The First Time

Regardless of the type of connection you're making, you have a SETUP option. Before you can actually initiate communications the first time, you need to use it. This opens the appropriate COM SETUP screen, on which you can specify how your hardware is set up.

- The MODEM option is a pull-down menu of common modems. Select your modem from the list, and **CivNet** will configure almost everything else for you. The INITIALIZATION, DIAL, AUTO ANSWER, and HANG UP fields contain the various strings that your modem uses. Unless you really know what you're doing, use the default settings. Whenever you choose a new modem using the MODEM option, these strings are automatically updated to match your choice.

- From the COM PORT options, select the number of the port to which your modem or null-modem cable is attached.

- From the BAUD RATE options, choose the speed at which you want to transmit data. **Note:** Both players must choose the same speed—the speed of the slower of the two modems. Otherwise, you might experience communications problems during the game.

- Finally, select the type of dialing service you have. Very few homes still have PULSE dialing; everyone else should use TONE.

When the setup matches reality, click OK to save the info and leave the COM SETUP screen.

Connecting

The next step is actually connecting to the other player's computer or to the BBS host. Your options depend on which method of play you chose.

- A null-modem connection is simplest to make. Just click the Connect by Cable option. The connection should be almost immediate, and the player who is starting the game can begin setting up.

- If you chose Game Connection Protocol (for a BBS game), you only have one option other than Setup; select Dial BBS. The CivNet Phonebook screen appears.

- If you're playing a modem game, you must decide whether your computer is the host (or server) computer or the remote machine. The person who is starting the game and doing all the setting up should be the host. To host, click Dial. To be the remote, click Answer. Whichever you choose, your opponent *must* click the other one. (Unless you're within earshot of each other, you should decide beforehand who will be which.) If you click Answer, you choose to have your computer wait for a call from your opponent's computer. If you click Dial, the CivNet Phonebook screen appears.

The CivNet Phonebook

The Phonebook is a convenience. You can store numbers that you expect to use often, rather than having to type them in every time.

Enter your opponent's name (or the name of the BBS) in the Name box and the corresponding phone number in the Number box. If you only expect to use this number once, then that's it. Click Dial to call the number. If you think you'll be calling this number again, click Add to copy the listing into the List box. Once you have added a listing to the List box, you can simply select that listing to bring it into the Name and Number boxes. Click Dial to call. You can remove numbers you no longer call using the Delete button.

If you are playing head to head, the next step is setting up the game. If, however, you are playing via a BBS, there's one last complication.

The Game Connection Protocol

Once you've connected to a BBS, the Game Connection ANSI Terminal window opens.

Use this window to log onto the BBS as you would normally.

Unfortunately, most bulletin boards aren't set up so that you can just log on and start playing *CivNet* (though it would be nice). Every BBS is different, but most have an area dedicated to games. You need to find that area. Go through whatever process is necessary to enter one of the game channels. The only thing you really need to remember is that *CivNet* is designed to work with the Game Connection Protocol (GCP). When the BBS prompts you to choose a game mode, you must select GCP.

You might need to change game channels until you find one that either has a *CivNet* game running already or has room for you to start one. Once you settle in a channel, you can type in the GCP commands to start or join a game, or you can use the button at the bottom of the window to start a game or join one as it is forming.

Now, you're ready to play.

SETTING UP THE GAME

Enter Your Net Name

Once you've connected to play a network, Internet, or BBS game, the first thing you need to do is choose a network name. This is the moniker by which other network players know you. You can use your own name or a pseudonym that appeals to you. In any case, your name can't be longer than 31 characters (letters and spaces). When you have entered a name you like, press [Enter] or click OK.

Joining a Game

Next comes a simple choice; you can join a game or start your own. If you elect to join a game that someone else is setting up or has already started, click the JOIN A GAME option. What happens next depends on how you're connected.

The Internet

It would be ludicrous (if not impossible) to scan the entire Internet for ongoing *CivNet* games. Therefore, to play on the Internet, you should know of a specific Internet address at which a game is likely to be running. You must direct *CivNet* to that address in order to join a game there.

Once you've clicked Join a Game, the Internet version of the CivNet Phonebook appears. Enter your description of the address in the Description box. The actual Internet address goes in the Address box. Be careful! This address is *not* the same as an e-mail address. An Internet address is actually a machine name, which can be in one of two formats. One of these is a series of four numbers, all smaller than 256, that are separated by periods— **255.44.2.100**, for example. The other format is an actual name, such as **dasid.microprose.com**. This format looks similar to an e-mail address, which might cause confusion. One easy clue to watch for is that no machine name will *ever* have an at sign (@) in it.

If you only expect to use this address once, then that's it. However, if you think you'll be playing at this address again, click Add to copy the listing into the Hot Spots box. Once you have added a listing to the box, you can simply select that listing to bring it into the Description and Address boxes. You can remove addresses you no longer use by highlighting them and clicking the Delete button.

When the address is correct, you have two options. If you know absolutely that there is a game you can join going on, go ahead and click Connect. To check on the game status of the address, use Ping instead. Regardless of which button you click, the **Hot Spots** box is replaced by the **Status** box.

If you're pinging, a successful connection will return information about any game currently forming or an open game running at that address. If you're trying to join, success will take you right to the **Waiting for Permission** notice. At any point during the connection attempt, you can click Cancel to abort the process. You can acknowledge and clear error messages using OK. Note that clicking Cancel when the status box is not active exits this screen.

Every Other Network
On any type of network other than the Internet, the Games Currently Running screen appears after you choose to join a game.

This screen includes a list of open network games (if a closed game is running, it does not show up on this list). Select a game from the list, then click on the Info button to see the title, the initiating player's network name, the difficulty level at which he or she has chosen to play, and the number of civilizations included in the game. One of these civilizations belongs to the initializing player; the others might be up for grabs.

Click on the Cancel button if you don't want to play in any of these games, or if you need to go back to an earlier screen and change your name or other settings.

When you're ready to join in, click the JOIN GAME button to ask permission from the player who started the game you selected. Permission might take a few moments. (You can exit if the wait gets too long; your bid for entry into the game will be cancelled.) When you get a message requesting that you choose an army, you're in. If you get a rejection message, the initiating player has refused to let you into the game.

Starting a Game

If you're the player who's setting up the game, click the START A GAME option. No matter which kind of network you're playing on, the GENERAL GAME SETUP screen appears. This screen allows you to set the parameters of your game. Internet players should note that the game you start will be located at your Internet address; any players who want to join should search there for it.

General Setup

The text entry field at the top of the box is where you can enter a title for your game. As a default, *CivNet* assigns your network name as the game's title: If your netname is "Duck," for example, the title is "Duck's Game." You can choose a title that reflects special problems (like "Desert World"), special conditions ("Advanced Players Only"), or anything you like. A game title cannot be longer than 31 characters (letters and spaces).

Click the OPEN GAME option if you want your game to appear in the list of currently running games. New players can request entry into an open game at any time. Click CLOSED GAME, instead, if you'd rather have your game be invisible to other network players. Once a closed game begins, no one can join in unless you shut it down and restart it as an open game.

The PLAYER MUST FINISH IN... option allows you to set a time limit on each turn. This time limit works in one of two ways. In a turn-based game, each player's turn is limited to the time you choose. In a simultaneous movement game, the last player to finish a turn has the amount of time you specify here *after* everyone else has ended their turn. Click on one of the pre-set times that suits you, or use the OTHER option to enter your own limit.

The Total Turn Time option allows you to set a real-time limit on the length of each turn in the game. During a simultaneous play game, this limit applies to the turn as a whole. For turn-based play, the limit applies to each player's turn. When this time has elapsed, CivNet notifies every player, then ends the turn. (If you have both this time limit and the Player Must Finish in... limit active, whichever runs out first will end the turn.) Click on the time limit that suits you or use the Other option to enter your own limit.

Click on the Load Existing Game button to call up the list of saved game files. Once you've chosen a file, click OK to proceed through the minimal setup CivNet requires to continue your game.

The Start New Game button launches you into the procedures usual to defining a new game and world, just as if you were starting a single-player game.

After you choose your tribe and leader, you get a glimpse of your starting position. Then you must wait for the others.

Waiting for Players to Join...

This screen lets you choose which players oppose you. As each potential player chooses your game from the list of games currently running, that person's network name appears in the Going to Play roster. If more people want to play than you have civilizations available, the extras overflow into the Want to Play roster. (A slider bar appears if you have more aspirants than the roster can display all at once.)

If there is someone on the roster with whom you don't care to compete, or (perhaps more likely) someone on the Want to Play roster whom you want to include, the buttons below each roster allow you to re-mix your opponents. Highlight the network name of any unwanted player on the Going to Play roster, and click Remove From Game to shunt the name to the Want to Play roster. Now highlight the network name of the desired player on the Want to Play roster and click Allow in Game to advance that name to the Going to Play roster.

Any players remaining on the Want to Play roster will be able to join your game later if a player drops out or is eliminated. If you'd rather a particular opponent not have this ability, highlight his or her network name on the Want to Play roster and click Reject Player to remove that player from consideration for the duration of the game.

When you are happy with the Going to Play roster as it stands, click on Start Game. Each player goes through the civilization and ruler setup, then the game begins.

HOTSEAT

A "hotseat" game is one in which multiple opponents play at the same computer. Each player takes a turn, then relinquishes control to the next person. The START A NEW GAME option sends you to the standard game setup screens, then each player has a chance to choose a tribe, a ruler, and all the usual stuff. Of course, you must start with at least as many civilizations as there are human players. If you choose to play with more civilizations than you have friends, the computer AI controls the cultures no player chooses.

The fact that all of the human players are physically in the same place makes the multiplayer game's chat functions sort of pointless. Thus, they are disabled during a hotseat game. Offerings and negotiation for treaties can still take place, but with a significant difference; the act of one human player offering a treaty to another is taken to mean that the two of you have already agreed (in conversation) to the treaty. A treaty, once offered, is *automatically* accepted.

Before you meet your neighbors, you can make anonymous broadcasts that appear to every player in the game. Just choose the Anonymous Broadcast option from the Multiplayer menu, then type your message in the box. The box scrolls forward to accommodate long messages. If you want to correct spelling errors or edit your phrasing, you can use the arrow keys or the mouse to reposition your cursor within the box. CivNet won't broadcast your message until you press **Enter** to send it. Once you do, your message pops up on every player's screen in the Chat Monitor. For your convenience, you can leave one or both boxes open as you play, or open each as you need them from the Multiplayer menu.

As in a single-player game, you can only negotiate with rival rulers in a multiplayer game after your units have made contact. (Players in a Chieftain level game are the exception to this rule: At any time, a Chieftain level player can meet with any other player.) The first time your units meet, you have the option of opening a dialog immediately. Later, since you have the option to talk at any time, contact between units does not normally inspire a meeting.

To request a meeting with another player (human or AI), select the Meet with A King option from the Multiplayer menu. Negotiations with AI players use the same diplomacy screens and options as in the single-player game (see **Diplomacy** for details). Negotiations with human opponents are more flexible. They are conducted in the Chat window.

DIPLOMACY WITH HUMAN OPPONENTS

The Chat Window

When you meet with a human player, the CHAT window opens. Your opponent's leader is flanked by his advisors just as the AI leaders are, but more information is available. At the bottom of the portrait, the leader's tribe and title, the mood you are showing him or her, and the cultures to whom you are talking are noted. Below the portrait, a split text box displays the conversation so far and a window in which you can compose what you want to say. There are quite a few buttons in the CHAT window.

- Click on any one of the mood buttons to change the facial expression your rival sees you wearing. The VIEW US button lets you examine what your opponent sees—your portrait.

- SAVE CHAT LOG records all of the text in the top portion of the split text box (the actual conversation) in a text file. The LOAD CHAT LOG button lets you retrieve a previously recorded conversation into the split box, which might be a useful reminder when you continue a game after several days' hiatus.

- The LONG WINDOW button removes the portrait altogether to make more room for the split text window. To bring back the portrait, use the SHORT WINDOW button.

- To make formal declarations of peace or war, choose the TREATIES option. The screen that appears includes info on your current status and several buttons. These buttons do exactly what they say. You can offer or break treaties with individual civilizations or with every culture you've run into.

- To offer money or advances to the player with whom you're negotiating, click the OFFERINGS button. The screen that appears shows your cash on hand and allows you to give any or all of it to the other player. You can also grant advances. The list shows any advances you have discovered that the other player has not. Select the one you'd like to give, then click the GRANT button.

- The CHAT button returns you from either of the other screens to the original window (the one with the split text box).

- The CHAT MODE button lets you specify which player or players will receive your side of the chat negotiation. You can choose to include any or all of the players with whom you have made contact. Note that only the player with whom you started the chat will receive any cash or advances you offer.

When you're finished negotiating, click the close button in the upper left-hand corner of the window.
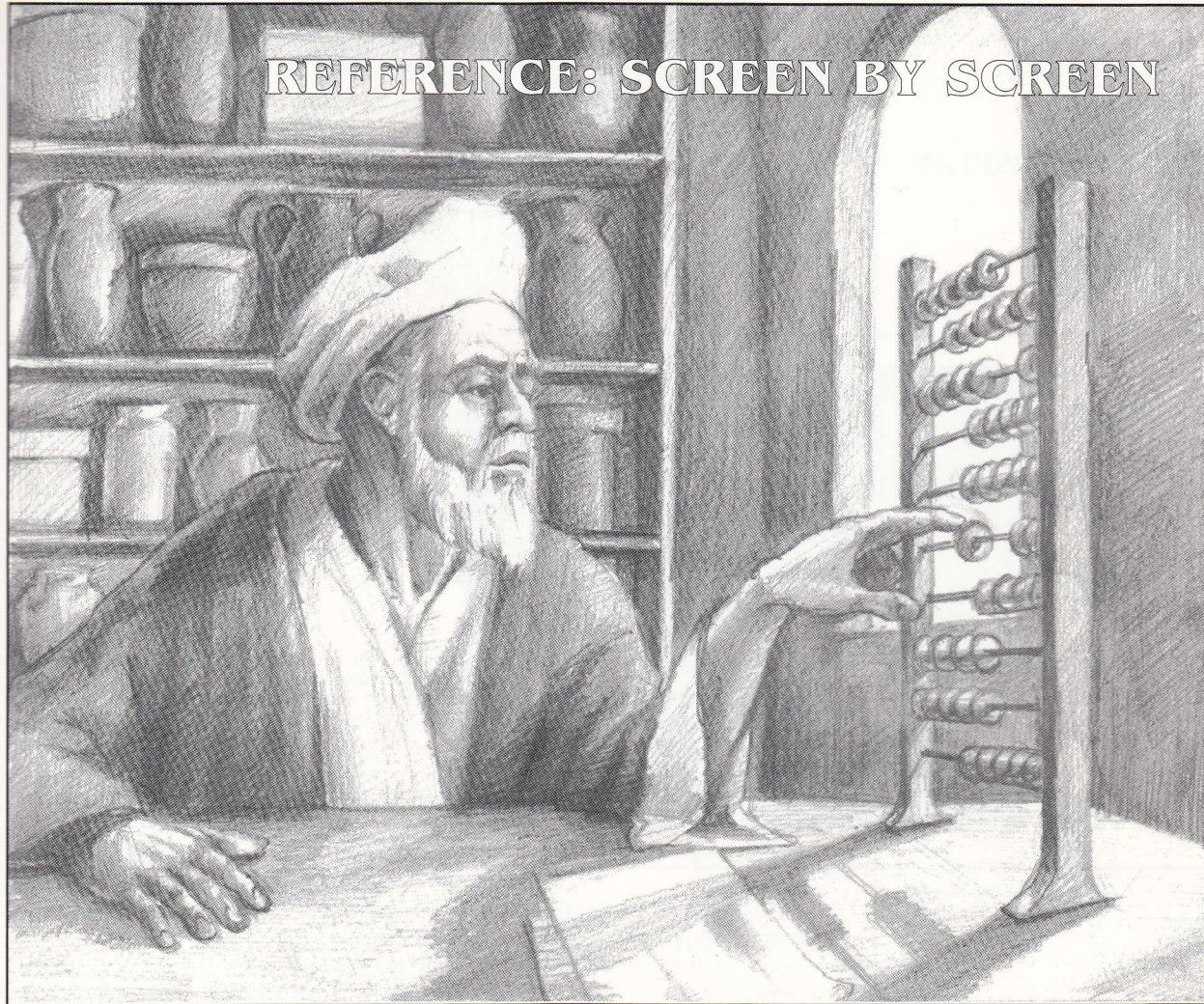
This section details each screen in the game, and what all of its buttons and options do. We'll refer you back to the body of the manual for the whys and wherefores—all we're discussing here is the how-to's. The screens are covered alphabetically, for ease of reference.

THE CITY DISPLAY

You can direct the operation of each city from the CITY DISPLAY. Here, you assign citizens to work in the surrounding fields, mines, forests, and fishing grounds. This display collects in one place all the critical information concerning the pictured city's status: how many wheat, shield, and double arrow icons it is generating; what it is producing and how close the item is to completion; the happiness of the population; who is defending the city; and what improvements you've already built.

You can open the CITY DISPLAY in one of three ways.

- Position the cursor over the appropriate city square in the VIEW UNITS window. When the torch turns into a city skyline, click on the city square to open the display.
- From the MENU bar, pull down the VIEW menu and choose JUMP TO CITY.
- Press F4.

You can close the display by clicking the box in the upper left-hand corner. If you prefer, you can check the CLOSE CITY ON ESCAPE option in the list of OPTIONS on the GAME menu, then use the ESC key to close the CITY DISPLAY.

Population Roster
Resources Box
General Information Box
Production Box
Backward Scroll Arrow

Food Storage Box
City Map
Improvement Roster
Forward Scroll Arrow
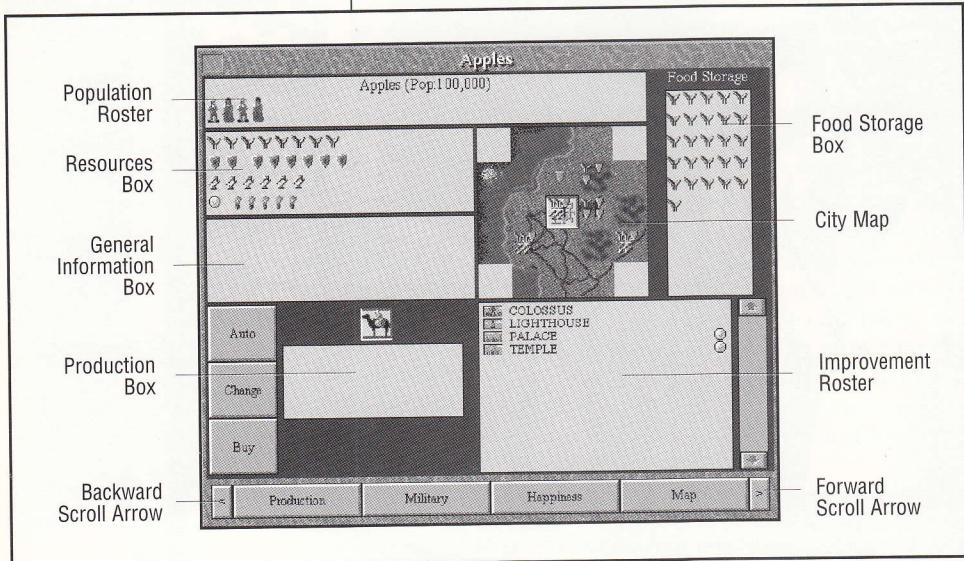
The default City Display.

CivNet has a City Display that is similar to, but not the same as, the original. Those of you familiar with *Civilization* should take a minute to learn the differences. We'll discuss each section of the display in turn. Two important new features are the forward and backward scroll arrows in the bottom right- and left-hand corners. These arrows allow you to cycle (in alphabetical order) through all of your cities, regardless of which city you originally clicked on. In addition, the Production box, Unit roster (or Military roster), Happiness chart, and Foreign Service map are now accessible through buttons arrayed at the bottom of the display. Production is the default mode when you first open the City Display. During the game, *CivNet* remembers the last mode you used and returns to that mode when you next open the display.

Population Roster

Each citizen icon in the Population roster represents one population point. (Note that each population point represents a different number of citizens as the game progresses; the actual population is listed in the roster, too.) In addition to the usual workers, a city can support three different types of Specialists.

Citizen icons can be happy (they wear bright turquoise clothing), content (they sport deep blue duds), or unhappy (they dress in red garb). If the number of unhappy people exceeds the number of happy people (with content people and Specialists being ignored), that city goes into civil disorder (see **Civil Disorder** for details).

Specialists

Citizens who are not working in the city radius are Specialists. Click on a productive city radius square, and the workers there become Entertainer Specialists (one citizen in the Population roster is replaced by an Elvis icon). Specialists no longer directly contribute to the resources a city generates. However, they might be useful in adjusting the amount of luxuries, taxes, and research the city generates. Specialists do consume food like other citizens. There are three types of Specialists. Cities must have a population base of five or more to support Taxmen or Scientist Specialists.

Entertainers: Citizens removed from the work force immediately become Entertainers. Each Entertainer adds two gem icons to the tally in the City Resources box. This additional trade is added before the effects of improvements such as Marketplaces and Banks are calculated. Creating Entertainers has the result of creating more luxuries, thus making more citizens happy.

Taxmen: Click on an Entertainer icon in the POPULATION roster to create a Taxman. Each Taxman adds two coins to the CITY RESOURCES box tally (instead of the two gems the Entertainer used to generate). No tax collection is made if a city is in civil disorder (see **Civil Disorder** for details).

Scientists: Click on a Taxman icon in the POPULATION roster to create a Scientist. Each Scientist adds two lightbulbs to the total in the CITY RESOURCES box (instead of the two coins the Taxman used to generate). This additional research is added before the effects of improvements such as Libraries and Universities are calculated. As with Taxmen, Scientists are only useful if your city is not in civil disorder.

Click on a Scientist icon to return it to Entertainer status.

Food Storage Box

Any surplus wheat icons generated by your city each turn accumulate in this box. The capacity of the box expands as a city's population increases. When the box overflows, your city's population grows by one point and a new citizen is added to the POPULATION roster. The FOOD STORAGE box empties and begins to fill again next turn.

If one of your cities is not currently producing enough wheat to feed its population, the citizens won't starve as long as wheat is available in the storage box. Each turn, any food shortage is subtracted from the wheat in the box. If the box is empty and the city still has a food shortfall, one point of population starves and disappears.

The Granary improvement has the effect of speeding population growth. When a city has a Granary, the FOOD STORAGE box only half empties when it overflows and creates more people. The box empties only to the granary line. In addition, a Granary protects the city from starvation during a Famine disaster.

The Resources Box

This box compiles all the resource icons generated by the city's workers each turn. Wheat, shields, and double arrows are collected each turn from the CITY RADIUS squares being worked by citizens. The amount of any particular resource collected might be increased by the presence of a certain improvement in the city, the form of government you choose, or by your ownership of a certain Wonder (see **City Improvements** for details). The total number of double arrow icons generated is further divided to three commodities: diamond, coin, and lightbulb icons.

Wheat

Each population point (citizen icon) in your city consumes two units of wheat each turn. Any surplus production appears after a small gap in the line of icons. This excess accumulates in the FOOD STORAGE box (see **Food Storage Box**).

If a city is not producing enough food to feed its population, the shortfall is indicated by darkened wheat icons after the break in the line.

Shields

Depending on the form of government under which your civilization operates, some of the shield icons generated each turn might be required to maintain units that a city has previously built. Any surplus production appears after a small gap in the line of icons. This surplus accumulates in the PRODUCTION box (see **Production Box**).

If the city's industrial capacity is not sufficient to maintain the existing units, the shortfall is indicated by darkened shields after the break in the line. If your turn ends and there is such a shortfall, enough units are disbanded to make up the difference, beginning with the ones farthest from the city.

Double Arrows

Trade, as totaled in the row of double arrow icons, is also divided into luxuries (diamonds), taxes (coins), and scientific research (lightbulbs), depending on your trade rates (see **Kingdom Menu** for details on setting trade rates). Depending on your type of government and each city's distance from your palace, some portion of double arrow icons might be lost as corruption. The shortfall corruption produces is indicated by darkened arrows after a gap in the line. The ratio of diamond, coin and lightbulb icons is figured after the corruption shortfall has been removed.

Diamonds: indicate the percentage of your trade devoted to luxuries, as well as bonuses from improvements, trade routes, and entertainers.

Coins: indicate the percentage of your trade devoted to tax revenue, as well as bonuses from improvements, trade routes, and tax collectors.

Lightbulbs: indicate the percentage of your trade devoted to research, as well as bonuses from improvements, trade routes, and scientists.

General Information Box

This box summarizes trade route bonuses and displays smokestack icons when pollution is a threat. A city can have up to three trade routes in operation at any time. Each destination city is listed, along with the number of bonus double arrow icons generated each turn. When smokestacks appear in the GENERAL INFORMATION box, each represents about a five percent chance that a random terrain square within the city radius will become polluted this turn.

City Map

This detail map shows all of the discovered terrain squares within a city's radius. The city square itself is always under production. For each population point above one (or each additional citizen in the POPULATION roster—see **Population Roster**), you can work one additional square. The maximum number of squares a city can work is the number of citizens plus one or twenty-one, whichever is smaller. Note that it is possible to have more citizens than there are squares to work.

Depending on the type of terrain in a map square, citizens working there can produce wheat, shield or double arrow icons. Most squares produce a combination of several resources. Clicking on any square under production (except the city square, which remains permanently under production) temporarily takes that citizen off work. Click on an unoccupied square to put the citizen back to work in a new place. You can move people from one square to another however you wish to change the mix of resources the city is harvesting. Citizens removed from work are temporarily converted into Specialists in the POPULATION roster.

When the city population increases, each new citizen is automatically assigned an area to develop. You might want to review the map of a city that has just increased in size to be certain that workers have been placed as you wish.

Production Box

Any surplus shield icons generated by your city each turn accumulate in this box. The capacity of the PRODUCTION box changes to reflect the cost of the unit, improvement, or Wonder currently under construction. When the box is full, the item is complete. The box empties, and the new item is ready for use. The item being built is noted by its icon, if it is a unit, or by its name if it is an improvement or Wonder. Items available for building depend on the advances your civilization has achieved.

Production Box & Improvement Roster.

If you are producing a unit or Wonder that a new advance supersedes or makes useless, production of the obsolete item continues. You must change production to a modern replacement, or you'll still be training phalanxes while your rivals are pumping out riflemen. If you are building a Wonder and another civilization completes it before you can, you must change production in that location or the city will continue accumulating shield icons forever.

Some Wonders on the PRODUCTION menu might be marked with an asterisk (*) before their name. This indicates that the Wonder's special ability has been made obsolete by someone's discovery (not necessarily yours) of the terminating advance. You may still build obsolete Wonders to gain points toward your final score (see **Scoring** for details).

Auto

The AUTO button allows you to hand production choices off to one of your advisors: The game automatically decides what to build next after each item is completed. Choose from MILITARY FORCES, an option that concentrates on building a strong war machine; PEACEFUL EXPANSION, which maximizes each city's infrastructure; or CUSTOM for which you choose what units and improvements you'd like to focus on, and in what order.

Change

You can use the CHANGE button to switch production to another item at any time before the production of the existing item is completed. If you have already accumulated sufficient shields to construct the new item, any excess is lost, and the item is immediately completed. Otherwise, any shield icons roll over and accumulate toward the new item.

Buy

You can also speed the completion of an item by clicking the Buy button. A dialog box shows how large a cash outlay the rush job requires (see **Rush Jobs** for why you might choose this option). If you have sufficient funds in your treasury, you are given the option to buy the item outright.

Improvement Roster

This roster shows all of the existing improvements and Wonders of the World in the city. Each entry in the list includes the item's icon and name. If the improvement is one you can sell, there is a coin icon next to the listing. Click on the coin to sell the item. (You can not sell Wonders.) Improvements are added to the roster as they are completed. Any improvements destroyed by disaster or bombardment are removed from the list, as are any improvements you sell. Note that Wonders will remain on the roster even after their special ability has become obsolete.
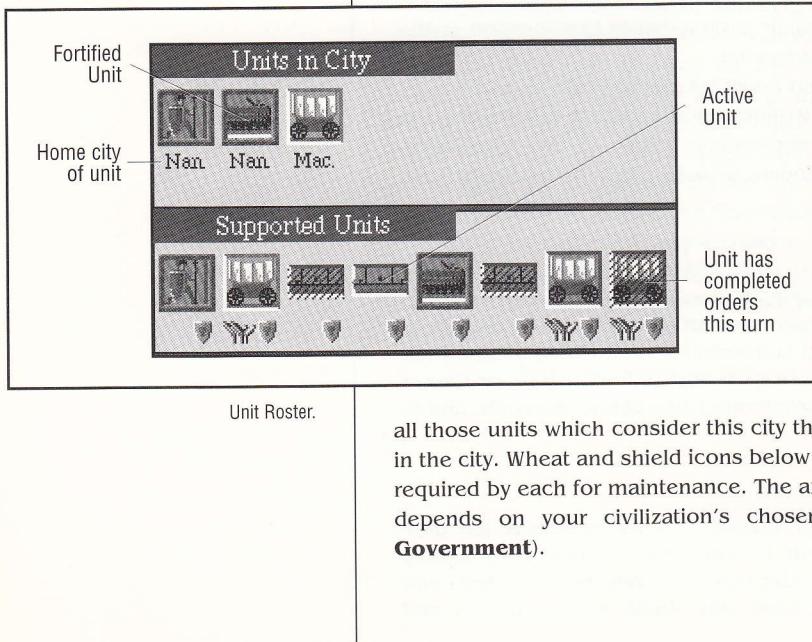
Unit Roster

Click on the MILITARY button to see the UNIT roster. The roster includes two windows. The UNITS IN CITY window shows all of the units currently stationed in the city. A dark gray outline around a unit icon indicates that it is fortified, a white drop shadow indicates an active unit, and a grayed out icon indicates a unit on sentry duty. Icons with cross-hatching have completed orders this turn. A three letter abbreviation below each unit indicates the home city of that unit.

The SUPPORTED UNITS window shows all those units which consider this city their home city, even if they are not present in the city. Wheat and shield icons below these units indicate any resources or food required by each for maintenance. The amount and type of support that units need depends on your civilization's chosen form of government (see **Types of Government**).

Unit Roster.

Additionally, if your civilization operates a Democracy or Republic, a black mask icon appears below armies on foreign duty (that is, not stationed in their home cities), indicating that their absence is causing unhappiness in the city.

If the city does not generate enough resources to maintain all of the units in the SUPPORTED UNITS window, units left unsupported are destroyed, beginning with those farthest from the city.

Happiness Chart

The HAPPINESS chart breaks down the factors affecting the happiness of a city's population into a series of citizen icon representations. Each row encompasses the effects of the previous row and adds the results of specific measures.

Happiness Chart.

The first row shows the natural happiness of a city's population before any adjustments. The number of content citizens is determined by the difficulty level at which you are playing.

The second row shows the effect luxuries have in the city, if any. Every two units of luxuries make one content person happy or one unhappy person content. Note that contented persons are made happy before unhappy persons are made content.

The third row adds in the benefits of city improvements like Temples, Cathedrals, and Colosseums. See **City Improvements** in **Reference: Item by Item** for specific details.

The fourth row adds in the effects of martial law and foreign service. Any units imposing martial law are shown in this row. Under a Republic or a Democracy, martial law does not work, and this row instead displays any black mask icons generated by having units on foreign service.

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Foreign Service Map

The fifth row adds in the effects of any Wonders of the World, whether in this city or elsewhere, that influence the population's happiness. Additionally, the fifth row reflects the attitudes shown in the POPULATION roster, since all of the adjustments have been factored in.

Specialists do not register on the HAPPINESS chart, although the diamonds generated by Entertainers are added into the second row tally.

Foreign Service Map

Click the MAP button to see a miniature map of the world. The city location is noted on this map, and so are the locations of all of this city's units assigned to foreign service. Trade routes established with other cities appear as lines connecting the two cities, and the income they produce is displayed in the GENERAL INFORMATION window.

MENU BAR

The menu bar extends across the top of your computer screen. There are nine menus available: GAME, VIEW, MULTIPLAYER, CITY, KINGDOM, ORDERS, ADVISORS, WORLD, and CIVILOPEDIA. You can open each menu by holding Alt and pressing whatever letter in the name of the menu is underlined. You can also just click on the menu title itself. Once you have pulled down a menu, you can click on any option to highlight it or use the arrow keys to move the highlight to that option. Once an option is highlighted, press Enter to select it. (An easy alternative is to simply double-click on the option.) Some options also have a shortcut key or key combination (listed next to the option on the menu). Even when the menu is not open, using the shortcut is the same as using the option itself. As is fairly standard in program menus, an option which is grayed out is currently unavailable.

Game

The items in this menu are what we call meta-game functions. These are things that affect the entire game.

Save Game

Choose this option to save your game. *CivNet* suggests a name for the file in which the game data is saved, but you can type in any name you like—as long as it is eight characters or less. The extension on the filename must be **.sav** for *CivNet* to recognize it as a saved game. The only limit on the number of saved games you can have is the capacity of your hard disk.

Retire

Retiring is a way of ending your game. When you retire (instead of quitting), the game shows you how your civilization did in comparison to the others. First, you must confirm that you want to retire. Then the *CivNet* power graph appears, displaying each civilization's progress in a different color. Click anywhere on the screen to move on to a final accounting of your score. Finally, click anywhere again to go on to the CIVILIZATION HALL OF FAME. This screen lists the top five scores earned so far. If your score is high enough, it too will be recorded.

When you finish a game completely, either by winning or losing, you see the appropriate end of game sequence and an even more detailed retirement sequence. After the game tallies your final score, click to continue on to the REPLAY screen. Choose the NO REPLAY option if you just want to exit. The QUICK REPLAY option shows a map-based recapitulation of the game. The events recorded in a QUICK REPLAY are the founding and destruction of cities and the launching and landing of spaceships. The COMPLETE REPLAY option recaps your civilization advances and the building of each Wonder of the World as well. In addition, the COMPLETE REPLAY pauses at preset years to give you a chance to digest the information. To save a record of your exploits, choose the WRITE REPLAY TO DISK option.

Once you've highlighted the appropriate option, click the OK button to see your final score.

Pause Game

Sometimes, even the most dedicated players need to take a break. If you're in the middle of a multiplayer game, however, leaving your civilization unattended could be a fatal mistake. To pause the turn timer (if one is active), use this option. It is common courtesy to send a broadcast to every player explaining why you are going to pause the game—contact lens popped out, doorbell ringing, etc. Any player (including you) can resume the game by choosing the PAUSE option again.

Options

This option calls up a list of other options. Each of these is a toggle; those with checked boxes are currently "on," and those with empty boxes are "off." Click on an option to toggle it from on to off or back again. Turning off some options, such as *Enemy Moves* or *Animations*, might speed play. When you have the game effects set as you want them, click OK to return to the game.

MUSIC includes the fanfares and themes that announce rival leaders and accompany special game events.

SOUND EFFECTS include battle noises, message alerts, and construction sounds. If you want to hear the audio cue that your turn is starting, make sure this box is checked.

MAP FIZZLE describes the way the map dissolves around the edges when the VIEW UNITS window shifts to another unit. If this is not checked, shifts in viewpoint might go faster.

ANIMATED MOVES shows the smooth progress of your units from square to square. If this option is not checked, units blink out of one terrain square and appear in the next.

ADVICE, when turned on, provides some helpful hints for new players. One difference from the original version that experienced players will notice is that research advice has been made a separate option.

ENEMY MOVES shows you the progress of any enemy units within observation range of your units and cities. When this option is not checked, you see only those enemy moves that result in combat with your units.

ANIMATIONS includes the sequences illustrating the founding of new cities, celebrations, conquering of cities, and protest marches.

PALACE VIEW shows the spontaneous improvements to your palace that your citizens offer.

AUTO SAVE automatically saves your game every turn and backs it up to a save file every five turns. If something dreadful happens and you need to restart the game, you can use one of these backup files just as you would any saved game.

USE END TURN BUTTON guarantees that your turn will not end until you click the END TURN button. If this option is not checked, you need only click END TURN to finish a turn when you have no active units to move. Any time limit, when it expires, will override this option.

CLOSE CITY ON ESCAPE lets you close the CITY DISPLAY by pressing ⌜Esc⌟. When this is not checked, you must click the button in the upper left-hand corner of the CITY DISPLAY to close it.

CLOSE ADVISORS ON ESCAPE lets you close the advisors' reports by pressing ⌜Esc⌟. When this option is not checked, you must click the button in the upper left-hand corner of the report window to close it.

REPORT UNMOVED UNITS instructs the game to remind you, whenever you click the END OF TURN button, if you control any active units (those without orders) that you have not moved this turn.

DETAILED REPORTS tells your advisors to pop up with a message whenever a report comes in (rather than simply posting the report). You have the option of taking action immediately or proceeding to the next report.

ALERT WHEN ATTACKED causes a special VIEW UNITS window to appear whenever one of your units is challenged. This window, which is centered on the relevant unit, supersedes any other windows or reports that you have open.

RETAIN CHAT HISTORY makes sure that all of your chat is preserved when you save and continue a multiplayer game. This option is an automatic version of the SAVE CHAT LOG and LOAD CHAT LOG buttons in the CHAT window. You can still use those buttons, of course, but you don't need to.

SHOW RESEARCH ADVICE ONLY is an option for players who have advanced beyond the need for most, but not all, of the automatic advice the game offers. When this option is checked, only your research advisor will make suggestions—regarding the next advance you should seek. The other advisors are still available via the ADVISORS menu, but they will not appear unasked.

Change Language

The text you see on the screen during a game of *CivNet* can be in French, German, or English. Use this option to choose the language you prefer. Once you've changed the language setting, you must restart *CivNet* for the change to take effect.

Note that the multiplayer game does *not* force every player to use the same language setting; each person chooses his or her own language. This makes international games much easier to play. Of course, messages typed into the CHAT window will be in whatever language the sender types—*CivNet* can't translate everything.

CIVNET

Set Password

Whenever you continue a saved multiplayer game, every player chooses a civilization to rule. This feature allows some to switch cultures if they wish. Unfortunately, it could also give a "civ poacher" the opportunity to steal your nation, if he or she chooses before you do. To help prevent this sort of unethical behavior, *CivNet* has a built-in security function. Use this option to password-protect your civilization.

Once you enter and verify your password, do not forget it! After anyone has saved this game, the security is in place. When you load that save file to continue the game, there is no way to regain control of your civilization without entering the password. Note that the password protection does not take effect until the game has been saved; previously saved games are not affected.

Quit

Choose this option if you just want to exit the game. You are asked to confirm your choice.

View

This menu includes options that affect the various game windows. You can adjust almost everything in view, find a particular unit or city, re-open windows you have closed, and more.

Zoom In

This option incrementally increases the size of the map squares shown in the current View Units window. This option functions in the same way as the ⊞ button in the upper left-hand corner of each window.

Zoom Out

This option incrementally decreases the size of the map squares shown in the current View Units window. This option functions in the same way as the ⊟ button in the upper left-hand corner of each window.

Zoom Level Max

This option automatically zooms in to the maximum size map square in the current View Units window.

Zoom Level Normal

This option resets the square size in the current VIEW UNITS window to the default size.

Zoom Level Min

This option automatically zooms out to the minimum size map square in the current VIEW UNITS window.

Jump to Unit

This option automatically centers the current VIEW UNITS window on the current active unit. If there is no current active unit, nothing happens.

Jump to City

This option automatically centers the current VIEW UNITS window on the city you most recently viewed using the CITY DISPLAY.

Default Desktop

This option returns all the windows in the game to the default setup for the size of your **CIVNET** window. This can be helpful if you've accidentally buried, closed, or "lost" an important window.

Open New View

This option opens an additional VIEW UNITS window. You can also double-click on a spot in the WORLD window to open a window centered on that spot.

Status

This option opens the STATUS window or, if it is already open, makes it the current window.

World

This option opens the WORLD window or, if it is already open, makes it the current window.

City Display

This option opens the CITY DISPLAY for whatever city you last viewed in the display. If the display is already open, this option makes it the current window.

Reports

This option opens the REPORTS window or, if it is already open, makes it the current window.

Multiplayer

This menu includes game functions that for the most part are only useful during multiplayer games. The only exception is the MEET WITH A KING option, which works during single player games as well.

Anonymous Broadcast

Use this option when you want to send an anonymous message to all of the other players. It is not possible to send private broadcasts; every player can read any announcement. For private meetings, use the chat features.

Chat Monitor

Use this option to open the CHAT MONITOR window. All of the anonymous broadcasts and messages sent to you from other players—plus those reported by any Diplomats you have spying on other players' conversations—are displayed in this window.

Meet with a King

This option lets you chat with the ruler of a rival civilization. You can only meet rulers whose troops you have encountered (except in multiplayer, Chieftain level games). Once you have established contact, all of the normal diplomatic options are available (see **Diplomacy** for details).

Quit Hotseat Game

This option lets a hotseat player surrender control of his or her civilization to an AI player. The area around that civilization's cities goes dark (if no other players have contact with that civilization), and the exiting player must click END TURN to pass control to the next player. From that point on, the turn sequence continues as before.

A player can rejoin a hotseat game later if there is an AI-controlled civilization available, but only if the current players agree to save the game and restart it with the new, correct number of human players.

If you are the only human player in a game, this option is grayed out.

Who's On

This option brings up a brief list of who's playing (the net names) and which civilization each controls.

City

Use this menu to gain quick access to your cities.

City List

This option expands (to the right) into a list of all your civilization's cities. Click on a city name to open the CITY DISPLAY for that burg.

Aerial View of City

This option shows you a landscape view of whatever city is highlighted in the CITY LIST or the last city you viewed using the CITY DISPLAY. You can see the relative size of the city, any improvements or wonders you have built, and representative citizens standing in the foreground.

Rename City

This option allows you to rename the city shown in the CITY DISPLAY. Names can be up to 31 characters long. You might want to rename your cities to fit some theme or culture that your civilization represents, but you should remember to pick names the first three letters of which are different for every city on your list. Units are labeled using the first three letters of a city's name, and you wouldn't want to get confused.

Kingdom

This menu includes options that affect not just one city, but your entire civilization.

Tax Rate

Choose this option to adjust the proportion of coin to lightbulb icons that each city generates each turn. As the percentage of taxes collected increases, the percentage of scientific research funded decreases. When your LUXURIES RATE is higher than zero percent, the total percentage of funds available for taxes and research decreases accordingly.

Luxuries Rate

Choose this option to adjust the proportion of diamond to lightbulb icons that each city generates each turn. As the percentage of luxuries produced increases, the percentage of scientific research funded decreases. When your TAX RATE is higher than zero percent, the total percentage of funds available for luxuries and research decreases accordingly.

Revolution

Choose this option when you want to switch forms of government. You must have acquired specific technological advances to choose a type of government other than Despotism. Usually, a revolution brings on a period of Anarchy. This can last for several turns. Eventually, you'll receive notification that your citizens are ready to choose a new type of government. All the options available to you are listed. Click on your choice.

Orders

This menu lists the orders you can give an active unit when it comes up in the queue. Orders that are grayed out are either not appropriate for the active unit or not currently available.

No Orders

Use this option to pass over a unit for the turn. The unit takes no action.

Found New City (Add to City)

This option tells a Settlers unit to create a new city where it stands. If the unit stands in an existing city with fewer than ten population points, the option reads ADD TO CITY instead, and the unit adds itself to the city as a population point. See **Settlers** for details.

Build Road (Build Railroad)

This option tells a Settlers unit to build roads across the square in which it stands. If you have discovered the Railroads advance, the option might read BUILD RAILROAD. In this case, your Settlers can improve existing roads to railroads. The Settlers display the letter "R" while they are working. See **Settlers** for details.

Build Irrigation (Change to Grassland, Change to Plain)

Use this option to order a Settlers unit to irrigate any Desert, Plain, Grassland or Hill square in which it stands. If your Settlers unit stands in a Forest square, the option is CHANGE TO PLAIN instead. If your Settlers unit stands in a Jungle, Jungle-Gems, Swamp-Oil, or Swamp square, the option reads CHANGE TO GRASSLAND. These alternate orders are exactly what they sound like. The Settlers display the letter "I" while they are working. See **Settlers** for details.

Build Mines (Change to Forest)

This option tells a Settlers unit to dig mines in any Hill, Desert, or Mountain square in which it stands. If your Settlers unit stands in a Plain, Jungle, Swamp, or Grassland square, the option reads CHANGE TO FOREST instead, and it orders the unit to do exactly that. The Settlers display the letter "M" while they are working. See **Settlers** for details.

Clean up Pollution

Use this option to order a Settlers unit to detoxify a polluted square. The Settlers display the letter "P" (for Pollution) while they are working. See **Settlers** for details.

Build Fortress (Fortify Unit)

Select this option to tell a Settlers unit to build defensive fortification in the square in which it stands. If the unit is not a Settlers unit, this option orders that unit to fortify itself where it is. See **Settlers** for details on fortifications, and **Military Units** for details on fortifying.

Wait

This option moves the currently active unit to the end of the active unit queue, so that you can give orders to every other active unit before you decide what to tell this one.

Sentry

When you order a unit to sentry duty, that unit is grayed out and assigned the task of remaining in the square it occupies. The unit maintains a sentry posture until you recall it (wake it up) or an enemy unit approaches an adjacent square. You can click on a sentried unit at any time to wake it and return it to active status. Units boarding a ship to undertake naval transport automatically assume sentry status when they ship out.

GoTo
This option allows you to give a unit a long distance destination. Once you have chosen the unit, you can click on a destination square (on the same continent, if it is a ground unit), and it will go to that location "on auto pilot."

Pillage
This option tells a unit to wreak havoc on the square it occupies, tearing down mines and ripping up irrigation and other improvements.

Home City
Use this option to reassign a unit to a specific city for support. The unit must be in a city in order to be reassigned, and (of course) it must be in a city other than the one it currently calls home.

Unload
This option "wakes" a shipboard unit, allowing it to move ashore or onto another ship. The unit's ship must be adjacent to a land square, a city square, or another friendly ship. You can also click on the ship to bring up a box showing all of the shipboard units, then click on each one that you want to unload.

Disband Unit
This option allows you to dismiss a unit from active duty. The unit disappears completely and irrevocably, so be careful when invoking this option.

Create Smart Settlers
This order allows you to program a Settlers unit for multiple actions. You can direct each Smart Settlers unit to automatically undertake up to four improvements on each terrain square within its home city's radius. (If one of your ordered improvements cannot be made to a square—for example, Mountains cannot be irrigated—the Smart Settlers skip that terrain when on their rounds.)

Alternatively, you can direct a Smart Settlers unit to build a road (and railway, if you've discovered the Railroad advance) from its current location to a city of your choice. If an enemy unit enters a Smart Settlers' zone of control, the unit breaks off the improvement it is currently constructing. A Smart Settlers unit displays a lightbulb icon while it is working.

Advisors

You can check with your advisors at any time to get an overall picture of your civilization's strengths and progress. Each report heading tells you what form of government your civilization currently employs, and your title reminds you of the level of difficulty on which you are playing. Advisors' reports also list the current date.

City Status

This report lists all the cities in your empire. For each city, you can see the population size, the number of wheat, shield, and double arrow icons generated each turn, what the city is building, and how close to completion it is. Cities are listed in descending order according to the date they were founded or added to your civilization.

Military Advisor

Your Military Advisor's report includes two "pages" (screens). The MILITARY ASSETS report includes the icon and name of each type of unit your civilization has, the ADM (Attack/Defense/Movement) numbers for that type, the quantity you have currently active, and the quantity presently in production.

Click on the CASUALTIES button to see page two, the MILITARY CASUALTIES report. This page shows both your casualties and the losses you have inflicted on other civilizations. Again, the report includes the icon and name of each unit demolished. The LOSSES column tallies your defeats. The ENEMY UNITS DESTROYED columns divide your opponents into columns by color and total each separately. A key across the bottom of the page identifies each rival civilization's color. Click on the MILITARY ASSETS button to return to the first page.

Intelligence Advisor

This report is a summary of the information gathered by your embassies. Your civilization is listed first, followed by a thumbnail sketch of each rival civilization with whom you have established diplomatic relations. These thumbnails merely name the ruler, form of government, total treasury, and diplomatic status with each other civilization. Click the REPORT button for a civilization to see a complete intelligence report, including the leader's name and disposition, the name of the capital city, the type of government, size of treasury, size of military, and diplomatic status with other civilizations. Finally, you get a list of all the technological advances that civilization has discovered. No information appears for civilizations with whom you have not established an embassy.

The Intelligence Advisor tells you which civilizations are at war and which are at peace—and with whom. You might find it useful to consult this report before attacking another civilization. For example, if two of your neighbors are at war, consider passing up the opportunity to attack one of them yourself. If you do attack, they might make peace with each other and both attack you. By leaving them at war, you are free to concentrate on your own progress while they wear each other down.

Attitude Advisor

This advisor summarizes the relative happiness of your citizens. For each city, this report lists the city name, displays the current POPULATION ROSTER (showing, in succession, every happy, content, unhappy, and specialist citizen icon; if there are no citizens in a particular category, the roster skips that category), and displays the icons of any city improvements which, directly or indirectly, increase the happiness of the people. For example, a Temple directly increases happiness. A Marketplace indirectly increases happiness by increasing the number of gem icons generated in the city, which in turn can improve a citizen's attitude.

Trade Advisor

Your Trade Advisor reports how much trade is directed toward bringing luxuries, tax revenue, and new ideas (scientific research) to each city. Below the list of cities is a total for tax collections per turn.

On the right side of the report is a summary of any improvements to your cities that require maintenance payments. The list culminates with your total improvement maintenance costs for this turn.

By comparing your tax revenue total (income) with your maintenance cost total (expenses), you can see whether the treasury of your civilization is increasing each turn, shrinking, or remaining the same. If your treasury is shrinking, this might be a good time to increase taxes or adjust individual cities to produce higher revenue. In an emergency, you might wish to sell an improvement to raise cash.

The final item in the report is labeled DISCOVERIES. This shows the number of turns needed for your scientists to acquire the next advance that you have directed them to seek. The more scientific research being done by your cities, the fewer turns required to discover advances. Note that as technology increases in your civilization and across the world, it takes more and more research to make the next breakthrough.

Science Advisor

Your Science Advisor keeps a record of the technologies your civilization has already achieved and the progress of your scientists toward their next advance. Technology that your civilization was first to learn is written in white letters. A chart shows progress toward the next advance. The light bulbs indicate how much research has been done. When the box is full of light bulbs, the advance being researched is achieved.

It is possible to continue making advances beyond the basic list that defines civilization up to the end of the twentieth century. These continuing advances are called Future Tech, and each one you acquire adds five points to your civilization score.

Research Advisor

Your Research Advisor keeps a list of possible advances that you can research. This list extends two levels of theory ahead of the advances you have already discovered. Choose an advance from the left-hand list, and a short flowchart diagrams the advances you need to achieve your goal. Technologies you have already discovered are noted, as are theories your researchers have yet to prove. If you'd like to see the path to another discovery, click on DISPLAY ADVANCES, then choose another to research. If you're just browsing, click the CLOSE button in the upper left-hand corner of the report to exit the screen.

If you'd like to be reminded of the research path currently being displayed, you must turn on the ADVICE option (or the SHOW RESEARCH ADVICE ONLY option) in the OPTIONS menu. (A message box reminds you of this requirement if ADVICE is off.) When you're satisfied with your choice, click CONFIRM RESEARCH to exit the screen. Now, when your advisor recommends a new advance to research, he'll also remind you of the path you're interested in following.

World

This menu allows you to view statistics comparing the progress of the world's civilizations.

Wonders of the World

This option shows the icon for each Wonder that has been built, and identifies both its location and the culture that (currently) owns it. If a Wonder was built but has since been destroyed, that fact is also noted.

Top Five Cities

This option brings up important statistics about the top five cities in the world, including their population size and citizens' attitudes, the culture to which they belong, and any Wonders present. City rank is determined by scoring two points for each happy citizen, one additional point for each content citizen, and ten points for each Wonder of the World built there. This list might even contain information on places you didn't know existed (your civilization has yet to discover them).

Civilization Score

Use this option to find out your score so far. You see a combined POPULATION ROSTER from all your cities, counting the total number of citizens in your entire civilization (the total points scored for population is given in parentheses). Next, the icons of any Wonders you have built are displayed, along with the total score you gain from these achievements (again in parentheses). Any bonuses for peace or penalties for pollution are listed. Finally, your total score appears near the bottom. A bar along the bottom of the report shows graphically what percentage of a "perfect" score you have achieved.

World Map

This option shows you a miniature map of the world, very similar to the one in the WORLD window. Colored squares indicate the placement of cities and troops, both yours and your rivals'. Blackness covers unexplored areas of this map.

Demographics

This option shows you a list of demographic statistics and the ranking of your civilization for each measure mentioned. If you have diplomatic relations with civilizations whose rank in a particular category is higher than yours, that culture's statistics are listed in parentheses after yours.

Spaceships

When you contact your space advisors, they report the progress of any spaceship under construction. Select from the menu the civilization whose spaceship you wish to examine. Your advisors present a picture of the construction accomplished to date and their assessment of what the craft can carry, its estimated flight time, and its probability of success.

The space race begins once the Apollo Program Wonder of the World has been constructed. Thereafter, any civilization that has the required technologies can begin building parts of a spaceship.

Once the space race begins, it is important to maintain a watch on the spaceships of your rivals. You need to assess when they are likely to launch so that you can plan the size of your own ship and its launch date. If you conclude that your ship construction is too far behind to catch up, it might be necessary to mount a military campaign to capture the enemy capital. Capturing an enemy capital destroys a spaceship, whether it is under construction or already launched.

Civilopedia

The CIVILOPEDIA is an on-line encyclopedia of **CivNet**. The entries under each topic appear alphabetically, and most of them extend for two pages. The first page describes the item and its historical importance; the second page explains the item's significance in the game.

Complete
This option lets you choose from every topic in the CIVILOPEDIA (for those times when you're not sure what type of item you're looking for). This list continues for several pages. Just click on the item you want to review.

Civilization Advances
This option focuses on the civilization advances (there are more than 70 in the game). The CIVILOPEDIA entry describing each advance automatically pops up when you acquire that advance.

City Improvements
This option culls the list to include only the structures you can build in a city to improve its working, including the Wonders of the World.

Military Units
The title of this topic might be slightly misleading, as **CivNet** considers all units to be military, even Diplomats, Caravans, and Settlers units.

Terrain Types

This option provides the entries for each type of terrain square that exists in
CivNet. Note that the special terrain types are included in the descriptions of the
terrain in which they appear (Oil under Swamp, for example).

Miscellaneous

This option includes all the information not covered under any of the other focused
topic lists, including government types and the effects of improvements (irrigation,
for example) on terrain production.

Interactive Guide

Use this option to bring up CivGuide without leaving the game. You must have the
CivNet CD-ROM in your drive for the guide to work.

Game Help

Click on this option to use the in-game Help.

THE STATUS WINDOW

The entries and symbols in this window report the current date and several facts
concerning the status of your civilization. There might be times when, for whatever
reason, the information shown in the Summary box is truncated. Whenever you want
to see the whole summary, click and hold somewhere in the box. The full summary
pops up for your perusal.

Palace Window

As you progress through the game, your achievements and skill in management are
acknowledged periodically by your people. Your citizens express their favor by
spontaneously building additions to your palace, which is located in your capital
city. (If you want to, you can relocate your palace by choosing, from the
Improvements menu in the City Display, to construct it in any other city you control.)
This window displays the current extent of your palace.

To make the additions to your palace that your population have offered, or to
simply gaze upon its beauty, double-click on the Palace window. A message across
the top of the window indicates the number of sections you can construct at this
moment. You may build all, some, or none of these additions. Click on the raised
box near the aspect of the building you want to improve.

World Peace Bar

Above your palace, a white bar indicates the accumulated turns of world peace. World peace exists when no civilizations are at war. Each turn of peace is worth three points toward your civilization score. (This bar might not be visible for quite a while.)

Summary Box

This quick reference box summarizes data you'll find useful during the game. Click and hold anywhere in the box to see an expanded report.

Population

This figure reports the current size of your civilization's population. The expanded view shows a percentage breakdown according to attitude.

Date

The date is reported in years, followed by the notation BC or AD. A normal game begins in 4000 BC. Each turn represents the passing of a period of years. Depending on the current date, turns might be 20 years, 10 years, five years, two years, or one year long.

Treasury

This figure reports the number of coins currently in your treasury. If it increases each turn, you've got a surplus; if it decreases each turn, you're operating at a deficit.

Trade Rates

The figures that appear here are your trade rates; each represents the percentage of your trade income derived from these sources: luxuries, taxes, and research.

Each of the three by-products of trade has its benefits. As time passes and cities grow, you might have to adjust the trade rates to provide a minimum amount of taxes and science research while providing more luxuries to keep the population sufficiently happy. To adjust trade rates, pull down the KINGDOM menu and choose either the TAX RATE or LUXURY RATE option. By setting these two rates, you set the science rate by default.
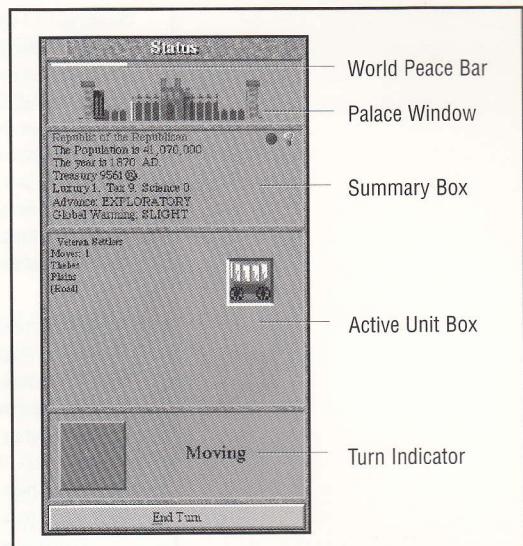
Status Window

Scientific Research

The lightbulb indicator gives a graphic representation of your progress, and the ADVANCE: summary gives a descriptive phrase indicating how close you are to discovering the next civilization advance. The lightbulb brightens and the phrase changes as you get closer to your goal. When the bulb is bright yellow, it indicates that you have acquired a new advance. Once the new idea is reported and your scientists are sent off to study something else, the lightbulb is turned off, and the phrase resets to indicate your new level of progress. The expanded view lists the topic you are currently researching. For more information on civilization advances, see **Science Advisor**.

Environment

A colored "sun" indicator graphically represents the risk of global warming, and the GLOBAL WARMING: summary indicates the degree of danger. When there is no risk of global warming, the sun indicator is not present. With the first case of pollution, the sun indicator appears, colored dark red. If pollution continues, the color gradually changes to light red, yellow, and then white. If pollution is not brought under control when the indicator is white, the planet suffers a bout of global warming, then the indicator reverts to a darker color—reflecting the new equilibrium.

Pollution and environmental problems can also be caused by nuclear reactor meltdowns and fallout from nuclear weapons. For more information on pollution and global warming, see **Planetary Caretaking**.

Treaties

In the expanded view, the SUMMARY box shows any civilizations with whom you have contact and the status of their relations with you.

Active Unit Box

The information reported here refers to the unit currently waiting for orders. This is the blinking unit. If a unit is not visible, press the JUMP TO UNIT ⓤ key to center the map on the active unit.

Nationality

This is the name of your civilization and the city to which the unit belongs.

Unit Type

This is the type of unit and whether it is a veteran or not.

Movement

This indicates the number of movement points the unit has remaining. If you are finished moving a unit, but it still has movement left, press the No Orders [N] key to skip to the next unit.

Note that points are shown both as decimals and as fractions when the unit is moving along a road (roads triple movement, making fractional movement points necessary). The decimal indicates which third of a movement point the unit has spent so far, and the fraction indicates the lowered attack strength. For example, a unit that begins with 1 movement point and moves one square along a road would show .2 movement points remaining and 2/3 attack strength.

Also, remember that units beginning on a square containing a railroad and moving along the railroad spend no movement points until they leave the railroad.

Home City

The name of the city that is supporting the unit is normally the city where it was built. You can transfer a unit to another city by moving it there and using the Home City option. This can be useful when one of your cities is threatened with capture, since all units supported by a captured city are destroyed.

Terrain

This is the terrain type of the square the unit is currently in. This terrain report disregards the presence of a city, but does mention other improvements such as irrigation, roads, and railroads.

Other Units

Near the bottom of this window is a list of friendly units that also occupy this square.

Turn Indicator

The colored square indicates the civilization currently moving.

THE VIEW UNITS WINDOW

The area shown in the current VIEW UNITS window is the section outlined in yellow on the WORLD map (see **World Window**).

You can move and re-size the VIEW UNITS window just as you would any other window. Note that, if you open so many reports, displays, or messages that you bury the VIEW UNITS window, you can bring it to the front of the heap by choosing VIEW UNITS from the VIEW menu.

You can use several different views to keep track of the action.

Window Buttons

The upper left-hand corner of the window frame includes ZOOM IN ⊞ and ZOOM OUT ⊟ buttons that let you customize the size of your map view. There are eight levels of adjustment, four up and four down from the default size. You can also choose any of the ZOOM options from the VIEW menu (see **View Menu**).

The colored CHANGE VIEW button cycles through a number of options related to the VIEW UNITS window. You can set the window to track your own armies, the units of any particular civilization, all units in the game, or even a static view. If you choose a static view, the window stays centered where it currently is.

Repositioning the Map

To reposition the VIEW UNITS window so that it shows a different section of the game map, simply click on any map square in the window. CIVNET redraws the map, centering on the square you selected. If you want to center on a square that is not presently in the window, you can also click on a location in the WORLD window to center there.

Centering on a Unit

Use the JUMP TO UNIT option on the VIEW menu to center the map on the current active unit (the one that is blinking), regardless of where it is in the world. Even if the waiting unit is not visible (because it is onboard a ship, say), the repositioned map centers on its location.

Multiple View Units Windows

To open additional VIEW UNITS windows, double-click in the WORLD window on the area you'd like to see enlarged. You can have a total of eight VIEW UNITS windows open at one time. The active VIEW UNITS window is the one with the highlighted border. To make a different window active, simply click on it.

WORLD WINDOW

This window shows a map of the entire world. It is centered on the part of the world shown in the current VIEW UNITS window. The yellow rectangle delineates the edges of that VIEW UNITS window.

You can use the WORLD window to move around the VIEW UNITS window more rapidly. Click on a square in the WORLD window, and both windows shift to center on that position.
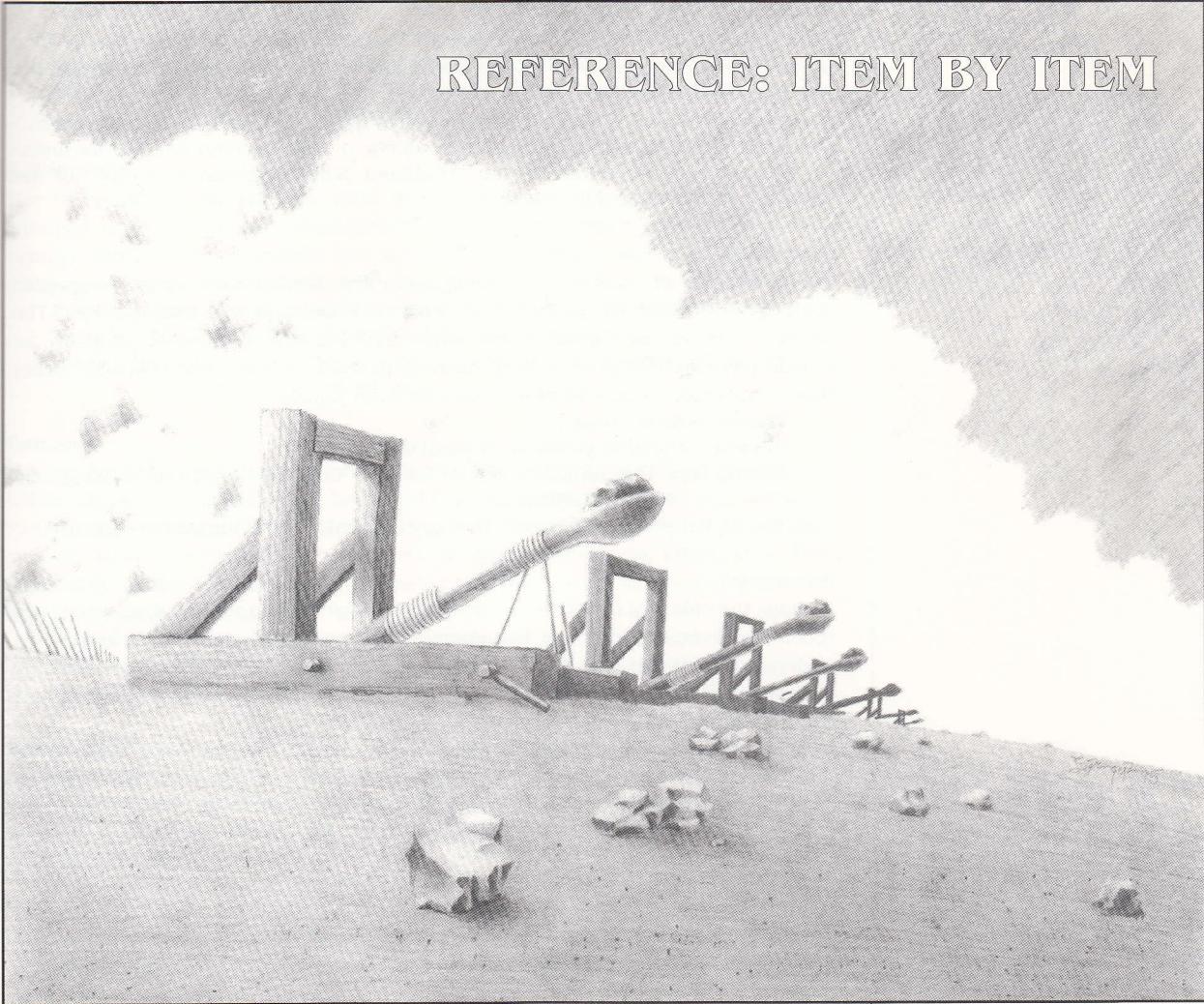
ADVANCES

Advanced Flight

Advanced Flight technology was a speciality of the Germans in World War II. They developed the first practical jet fighters, extremely long-ranged bombers, and the first guided rockets.

Prerequisites: Advanced Flight requires the Flight and Electricity advances.
Benefit: Advanced Flight gives the ability to build Bomber and Carrier units.
Allows for: Advanced Flight combined with Electronics allows for the Rocketry advance.

Alphabet

The ancestors of modern alphabets were the iconographic and ideographic symbols developed by ancient man, such as cuneiform and hieroglyphics. The development of the alphabet was significant because it allowed ideas to be transferred by paintings on pottery, carvings in stone, or impressions in clay, rather than simply face to face by either voice or hand signals.

Prerequisites: None.
Benefit: Alphabet yields no immediate benefit.
Allows for: The Alphabet allows for the Code of Laws, Mapmaking, and Writing advances.
The Alphabet combined with Masonry allows for the Mathematics advance.

Astronomy

Perhaps the oldest of the sciences, astronomy originated as simple observation and recording of regular celestial movements. Ancient Greek students of astronomy understood that the Sun was the center of the solar system, made reasonable estimates for the sizes and distances of the Sun and the Moon, and made a close estimate of the size of the Earth.

Prerequisites: Astronomy requires the Mysticism and Mathematics advances.
Benefit: Astronomy gives the ability to build Copernicus's Observatory Wonder.
Allows for: Astronomy combined with Mapmaking allows for the Navigation advance.
Astronomy combined with University allows for the Theory of Gravity advance.

Atomic Theory

Atomic theory, first proposed by Greek philosophers, was revived in the nineteenth century. Advances in physics, especially the development of quantum mechanics, have provided useful (though sometimes bizarre) explanations for the behavior of electrons and other sub-atomic particles.

Prerequisite: Atomic Theory requires the Physics and Theory of Gravity advances.
Benefit: Atomic Theory yields no immediate benefit.
Allows for: Atomic Theory combined with Mass Production allows for the Nuclear Fission advance.

Automobile

The first practical automobiles were developed in the late nineteenth century, although experiments with steam-powered wagons had been carried out over a century earlier. The automobile had a tremendous impact on the economy and lifestyles of the Western nations, and revolutionized warfare.
Prerequisites: The Automobile requires the Steel and Combustion advances.
Benefit: The Automobile gives the ability to build Armor units.
Allows for: The Automobile combined with the Corporation allows for the Mass Production advance.

Banking

Modern banking arose during the Renaissance among the merchant families of the Italian city-states. These families benefited from the increase in trade, both with the Middle East and within Europe. Wealthy merchants pooled their surplus money into a bank, then loaned cash (with interest) to other commercial enterprises. The availability of this capital for investment made many new businesses possible, accelerating economic growth.
Prerequisites: Banking requires the Trade and The Republic advances.
Benefit: Banking gives the ability to build the Bank improvement.
Allows for: Banking combined with railroad allows for the Industrialization advance.

Bridge Building

An important advancement in any civilization is the development of infrastructure construction improvements, which facilitate trade and communication. The Romans developed bridge building to a degree that it took Western medieval engineers many years to match.
Prerequisites: Bridge Building requires the Iron Working and Construction advances.
Benefit: Bridge Building gives the ability to build roads over streams and rivers.
Allows for: Bridge Building combined with Steam Engine allows for the railroad advance.

Bronze Working

Bronze working technology grew out of experiments combining the distinctive, greenish copper ore with other raw metals. These mixtures led to the discovery of bronze. The new metal proved harder and less brittle than copper, and it held a sharper edge. Tools, weapons, and armor made from bronze were also cheaper to produce and more durable.

> **Prerequisite:** None.
> **Benefit:** Bronze Working gives the ability to build Phalanx units.
> Bronze Working gives the ability to build the Colossus Wonder.
> **Allows for:** Bronze Working allows for the Iron Working and Currency advances.

Ceremonial Burial

Groping for an explanation of the world around them, the earliest humans developed the first concepts of religion. Gradually, rites of worship grew to include sacrifices, ceremonies, vigils, symbology, sacred items, and prayer. One significant step in the advance of worship was the ceremonial burial, often a ritual preparation of the deceased's body for the afterlife his or her culture anticipated. The remains of ceremonial burials offer some of the most detailed information about past civilizations.

> **Prerequisite:** None.
> **Benefit:** Ceremonial Burial gives the ability to build the Temple improvement.
> **Allows for:** Ceremonial Burial allows for the Mysticism advance.
> Ceremonial Burial combined with Code of Laws allows for the Monarchy advance.

Chemistry

The basis for modern chemistry was laid by practitioners of the pseudo-science alchemy. The primary goal of alchemy was to find a way to turn base metals into gold and silver, usually through the agency of elixirs or a Philosopher's Stone. Alchemy periodically surfaced and degenerated until the science of chemistry proved itself with medically and economically useful applications.

> **Prerequisite:** Chemistry requires the Medicine and University advances.
> **Benefit:** Chemistry yields no immediate benefit.
> **Allows for:** Chemistry combined with Gunpowder allows for the Explosives advance.
> Chemistry combined with the Corporation allows for the Refining advance.

Chivalry

Chivalry was a code of behavior followed by a landed class of mounted warriors, known in European cultures as knights. The chief chivalric virtues were piety, honor, valor, courtesy, chastity, and loyalty. These virtues represented a fusion of Christian and military morality and became the basis for rules of gentlemanly conduct.

Prerequisites: Chivalry requires the Horseback Riding and Feudalism advances.

Benefit: Chivalry gives the ability to build Knight units.

Allows for: Chivalry does not contribute to further advances until Future Tech.

Code of Laws

As populations grew and cities expanded, the need arose for established rules of conduct. The earliest known codes of laws existed in Babylon, India, and Palestine. Roman Law was the first to distinguish between public law, in which the state is involved, and private law, concerning disputes between citizens.

Prerequisites: Code of Laws requires the Alphabet advance.

Benefits: Code of Laws gives the ability to build the Courthouse improvement.

Allows for: Code of Laws combined with Literacy allows for the Republic advance.

Code of Laws combined with Ceremonial Burial allows for the Monarchy advance.

Code of Laws combined with Writing allows for the Literacy advance.

Code of Laws combined with Currency allows for the Trade advance.

Combustion

The development of the internal combustion engine—which burns fuel to produce power, which power in turn generates motion—was a great advance of the Industrial Age. By controlling combustion, an engine produces power from fuel more efficiently, and allows vehicles to travel reasonable distances.

Prerequisite: Combustion requires the Refining and Explosives advances.

Benefit: Combustion gives the ability to build Cruiser units.

Allows for: Combustion combined with Steel allows for the Automobile advance.

Combustion combined with Physics allows for the Flight advance.

Communism

Communism is a system of social organization. Individual ownership of real property is relinquished, and the means of production becomes the responsibility of all. Outrage over the greed of the new capitalists and the poverty of most workers in the beginning of the Industrial Age led economic theorists Marx and Engels to produce the *Communist Manifesto.* Their manifesto described the eventual rise of a classless society.

> **Prerequisites:** Communism requires the Industrialization and Philosophy advances.
>
> **Benefit:** Communism gives the ability to build the United Nations Wonder. Communism allows a civilization to declare a Communist government as the result of a revolution.
>
> **Allows for:** Communism combined with Mass Production allows for the Labor Union advance.

Computers

A computer is a device capable of performing a series of arithmetic or logical operations for a specific function. Computers run set routines, called programs, that combine these operations into complex tasks. Significant advances in computer technology take place at an amazing pace.

> **Prerequisites:** Computers require the Electronics and Mathematics advances.
>
> **Benefit:** Computers give the ability to build the SETI Program Wonder.
>
> **Allows for:** Computers combined with Rocketry allows for the Space Flight advance.
>
> Computers combined with Plastics allows for the Robotics advance.

Conscription

Compulsory enrollment in the armed forces, or conscription, was introduced in France during the Revolution in 1789. In the eras that followed, wartime conscription was instituted by many nations, including most of the major participants in the World Wars. The United States maintained peacetime conscription for nearly thirty years following World War II.

> **Prerequisites:** Conscription requires the Explosives and The Republic advances.
>
> **Benefit:** Conscription gives the ability to build Riflemen units.
>
> **Allows for:** Conscription does not contribute to further advances until Future Tech.

Construction

Population growth and increasing cultural sophistication caused a need for stronger, more elaborate structures than ancient artisans could build using mud bricks and mortar. Adopting stone as their new preferred material, these builders developed new techniques and skills in construction.

Prerequisites: Construction requires the Currency and Masonry advance.
Benefit: Construction gives the ability to build the Aqueduct improvement. Construction gives the ability to build the Colosseum improvement. Construction allows Settler units to build Fortresses.
Allows for: Construction combined with Iron Working allows for the Bridge Building advance.
Construction combined with The Wheel allows for the Engineering advance.

The Corporation

As companies began to grow, their need for large amounts of working capital increased exponentially. In the West, corporations of stockholders—w e a l t h y investors who bought a "piece" of the company—provided these huge capital investments. With a larger resource base, growth begot consolidation, as newly formed corporations grew stronger by buying smaller companies and resources.

Prerequisite: The Corporation requires the Industrialization advance.
Benefit: The Corporation yields no immediate benefit.
Allows for: The Corporation combined with Medicine allows for the Genetic Engineering advance.
The Corporation combined with Chemistry allows for the Refining advance.
The Corporation combined with Automobile allows for the Mass Production advance.

Currency

As cities grew, their internal economies became more complicated. People became specialists, some primarily producing grain, some pottery, some bricks, etc. A system of barter developed, so that one individual's wares and services could be exchanged for those of another. Currency filled the need for a more universal medium of exchange, and for more sophisticated ways to store purchasing power and set standards of value. The first satisfactory currency was coinage made from electrum, a naturally occurring alloy of gold and silver.

Prerequisite: Currency requires the Bronze Working advance.
Benefit: Currency gives the ability to build the Marketplace improvement.
Allows for: Currency combined with Code of Laws allows for the Trade advance.
Currency combined with Masonry allows for the Construction advance.

The Democracy

Democracy is a system of government in which citizens of a state, through the electoral process, share in directing the activities of that state. Modern democracies can be traced back to the Magna Carta of the thirteenth century.

Prerequisite: The Democracy requires the Philosophy advance.

Benefit: The Democracy allows a civilization to declare a Democratic government as the result of a revolution.

Allows for: The Democracy combined with Mass Production allows for the Recycling advance.

Electricity

The phenomenon of electricity—in the forms of lightning, static electricity, and magnetism—has been witnessed by humans since the dawn of time. Only in the last two hundred years has the energy of charged particles been harnessed.

Prerequisites: Electricity requires the Magnetism and Metallurgy advances.

Benefit: Electricity yields no immediate benefit.

Allows for: Electricity combined with Engineering allows for the Electronics advance.

Electricity combined with Flight allows for the Advanced Flight advance.

Electronics

Electronics is the technological offshoot of electricity that deals with the study and application of the way electrons flow in a vacuum, in gaseous media, and in semiconductors. Historical breakthroughs in electronics include the electron tube, the semiconductor, the transistor, and the integrated circuit.

Prerequisite: Electronics requires the Electricity and Engineering advances.

Benefit: Electronics gives the ability to build the Hydro Plant Improvement.
Electronics gives the ability to build the Hoover Dam Wonder.

Allows for: Electronics combined with Advanced Flight allows for the Rocketry advance.

Electronics combined with Mathematics allows for the Computers Advance.

Electronics combined with Advanced Flight allows for the Rocketry advance.

Engineering

The science of engineering originated with civil engineers, who built bridges, roads, aqueducts, and other city structures, and with military engineers, who built fortifications and weapons. Over time, engineering has come to include the design, construction, and operation of the structures and machines of industry, warfare, and day to day life.

Prerequisites: Engineering requires the Construction and The Wheel advances.
Benefit: Engineering yields no immediate benefit.
Allows for: Engineering combined with Literacy allows for the Invention advance. Engineering combined with Electricity allows for the Electronics advance.

Explosives

An explosive is a chemical compound or mixture that, when detonated, undergoes rapid combustion and produces heat, gas, and pressure effects. Explosives vary in brisance, or shattering effect, and in their stability under various environmental conditions.

Prerequisites: Explosives require the Chemistry and Gunpowder advances.
Benefit: Explosives yields no immediate benefit.
Allows for: Explosives combined with The Republic allows for the Conscription advance.
Explosives combined with Refining allows for the Combustion advance.

Feudalism

In the unsettled times following the collapse of Charlemagne's Frankish empire, a new social and political system arose in Europe, called Feudalism. Derived from the concept of Monarchy, Feudalism was a hierarchical system in which each descending stratum owed allegiance to those above. At the bottom of this heap were the serfs, who worked land for the lord of the local manor. The local lord in turn managed his serfs' lands for the lord above him, and so on to the king, who actually owned the whole country.

Prerequisites: Feudalism requires The Monarchy and Masonry advances.
Benefit: Feudalism yields no immediate benefit.
Allows for: Feudalism combined with Horseback Riding allows for the Chivalry advance.

Flight

Sustained, self-powered motion through the air, or flight, has tantalized humans since the dawn of time. Just after the turn of the twentieth century, Orville and Wilbur Wright made the first four controlled, sustained human flights at Kitty Hawk, N.C. The technology of flight advanced rapidly, and within a relatively few years, aircraft were circling the globe, safely delivering passengers and mail at record speeds.

Prerequisites: Flight requires the Combustion and Physics advances.
Benefits: Flight gives the ability to build Fighter units.
Allows for: Flight combined with Electricity allows for the Advanced Flight advance.

Fusion Power

Nuclear fusion is the process by which two atomic nuclei combine to form one heavier atomic nucleus, giving off tremendous energy as a by-product. Thermonuclear fusion reactions require very high temperatures to initiate and some system of fuel containment to sustain. Nuclear fusion offers great promise as a source of electric power, because safe fuel is available in large quantities and the process does not create the radioactive wastes that plague nuclear fission.

    Prerequisites: Fusion Power requires the Nuclear Power and Superconductor advances.

    Benefit: Fusion Power yields no immediate benefit.

    Allows for: Fusion Power does not contribute to further advances until Future Tech.

Genetic Engineering

Genetic Engineering is the manipulation of the DNA and RNA found in living cells through chemical and biological means. The hope is that this manipulation can reverse inherited defects in individuals and create stronger, weather- and disease-resistant crops.

    Prerequisites: Genetic Engineering requires The Corporation and Medicine advances.

    Benefit: Genetic Engineering gives the ability to build the Cure for Cancer Wonder.

    Allows for: Genetic Engineering does not contribute to further advances until Future Tech.

Gunpowder

Gunpowder is a chemical mixture of saltpeter, sulphur, and charcoal. When ignited, it burns so rapidly that it explodes if contained to any degree. Gunpowder is believed to have been developed by the Chinese as early as the ninth century, but it did not reach Europe until the 1300s. The Chinese appear to have used it almost exclusively for fireworks, but the competitive and aggressive Europeans turned it into weapons that revolutionized warfare.

    Prerequisites: Gunpowder requires the Invention and Iron Working advances.

    Benefit: Gunpowder gives the ability to build Musketeer units.

    Allows for: Gunpowder combined with Chemistry allows for the Explosives advance.

    Gunpowder combined with University allows for the Metallurgy advance.

Horseback Riding

The horse was first domesticated for transportation and warfare by tribesmen on the Asian steppes. These tribesmen used their superior mobility and speed to overwhelm the proto-civilizations just rising in southeast Europe and the Middle East. In turn, the conquered peoples learned to ride, and the new skill spread with civilization.

Prerequisites: None.

Benefit: Horseback Riding gives the ability to build Cavalry units.

Allows for: Horseback Riding combined with Feudalism allows for the Chivalry advance.

Industrialization

Industrialization involves the use of machines to dramatically increase productivity. Production of goods became concentrated in factories, reducing labor costs and concomitantly lowering prices. Industrialization revolutionized living standards, but not always for the better. The new worker class often suffered a grinding, subservient existence.

Prerequisites: Industrialization requires the Banking and Railroad advances.

Benefit: Industrialization gives the ability to build Transport units.

Industrialization gives the ability to build the Factory improvement.

Industrialization gives the ability to build the Woman's Suffrage Wonder.

Allows for: Industrialization allows for The Corporation advance.

Industrialization combined with Philosophy allows for the Communism advance.

Industrialization combined with Metallurgy allows for the Steel advance.

Invention

The contrivance of a previously unknown device, method, or process is known as invention. The advance of technical knowledge is driven by the discovery of new inventions. One measure of a society's progress is the degree to which it encourages and adopts new inventions.

Prerequisites: Invention requires the Engineering and Literacy advances.

Benefit: Invention yields no immediate benefit.

Allows for: Invention combined with Iron Working allows for the Gunpowder advance.

Invention combined with Physics allows for the Steam Engine advance.

Iron Working

Building hotter forges than they needed for bronze working, ancient smelters developed iron working, the manufacture and fabrication of a much more useful metal. Iron ore was extremely common compared to copper and tin, and worked iron was harder, less brittle, and could hold a much sharper edge. It was an ideal material for tools and weapons.

Prerequisite: Iron Working requires the Bronze Working advance.

Benefits: Iron Working gives the ability to build Legion units.

Allows for: Iron Working combined with Invention allows for the Gunpowder advance.

Iron Working combined with Construction allows for the Bridge Building advance.

Labor Union

Labor Unions arose as factory and mine workers attempted to right the inequities in power caused by the Industrial Age. Binding their interests together and bargaining collectively, workers forced owners to provide better working conditions and economic status.

Prerequisite: Labor Union requires the Communism and Mass Production advances.

Benefit: Labor Union gives the ability to build Mechanized Infantry units.

Allows for: Labor Union does not contribute to further advances until Future Tech.

Literacy

Writing was a powerful new tool for the advancement of knowledge, but, like all tools, it was only useful if employed. Where only priests and scribes were literate, all others had to share knowledge the slow way, through face to face contact. Where a high percentage of the population was literate, the economy benefited and the advancement of knowledge accelerated.

Prerequisite: Literacy requires the Writing and Code of Laws advances.

Benefit: Literacy confers the ability to build the Great Library Wonder.

Allows for: Literacy combined with Code of Laws allows for The Republic advance.

Literacy combined with Engineering allows for the Invention advance.

Literacy combined with Mysticism allows for the Philosophy advance.

Magnetism

The electromagnetic force of attraction and repulsion between various substances, especially ferrous metals, is due to the alignment of tiny electric charges and is known as magnetism. (Magnetism can also be induced using a moving electrical charge.) All known magnetic objects have two poles, one north-seeking and one south-seeking. The poles are so named because a freely floating magnet aligns itself with the Earth's magnetic field, which runs approximately north-south (though it has not always been that way).

> **Prerequisites:** Magnetism requires the Navigation and Physics advances.
> **Benefit:** Magnetism gives the ability to build Frigate units.
> **Allows for:** Magnetism combined with Metallurgy allows for the Electricity advance.

Mapmaking

The development of mapmaking allowed travelers to record the locations of important places and features on animal skins, clay tablets, tree bark, or other materials, and thus pass this information on to others. Seamen, who often ventured far from home with only the tales brought back by previous voyagers as guides, benefited most from this advance.

> **Prerequisite:** Mapmaking requires the Alphabet advance.
> **Benefit:** Mapmaking gives the ability to build Trireme units.
> Mapmaking gives the ability to build the Lighthouse Wonder.
> **Allows for:** Mapmaking combined with Astronomy allows for the Navigation advance.

Masonry

As tribes gave up their nomadic ways and settled the first cities, they soon found they had a need for permanent buildings. Some citizens became experts in the techniques of masonry—cementing rocks and mud bricks into buildings and walls. With experience, they were able to build larger and more elaborate structures. Buildings grew, defensive walls became more imposing, and the masons developed aesthetic styles to complement the merely functional.

> **Prerequisites:** None.
> **Benefit:** Masonry gives the ability to build the Palace improvement.
> Masonry gives the ability to build the City Walls improvement.
> Masonry gives the ability to build the Pyramids Wonder.
> Masonry gives the ability to build the Great Wall Wonder.
> **Allows for:** Masonry combined with Alphabet allows for the Mathematics advance.

Masonry combined with Currency allows for the Construction advance.
Masonry combined with Monarchy allows for the Feudalism advance.

Mass Production

Henry Ford is credited with both the development and installation of mass production assembly lines in his automobile plants. Products being built were conveyed from one work station to another along the line. At each station, a worker expertly repeated a discreet segment of the assembly process on each product. This process resulted in dramatic increases in productivity and, thus, the availability of products.

Prerequisites: Mass Production requires the Automobile and The Corporation advances.

Benefit: Mass Production gives the ability to build Submarine units.

Mass Production gives the ability to build the Mass Transit improvement.

Allows for: Mass Production combined with Communism allows for the Labor Union advance.

Mass Production combined with The Democracy allows for the Recycling advance.

Mass Production combined with Plastics allows for the Superconductor advance.

Mass Production combined with Atomic Theory allows for the Nuclear Fission advance.

Mathematics

Rudimentary arithmetic first gained wide use due to farmers' and traders' need to keep track of quantities, accounts, and measurements. Eventually, clever philosophers built on this mundane base to conceive an abstract theory of numbers, which they called mathematics. Soon after, military leaders found ways to use mathematics in the design of weaponry.

Prerequisites: Mathematics requires the Alphabet and Masonry advances.

Benefits: Mathematics gives the ability to build Catapult units.

Allows for: Mathematics combined with Philosophy allows for the University advance.

Mathematics combined with Navigation allows for the Physics advance.

Mathematics combined with Electronics allows for the Computers advance.

Mathematics combined with Mysticism allows for the Astronomy advance.

Medicine

The ancient Greeks first developed the study of the body and healing into a science. Hippocrates, considered the father of medicine, based his theories of the human body on observation and reasoning. Though most of his conclusions were later proven incorrect, his influence long permeated the field of medicine. Despite the medieval religious ban on research into the human body, Galen, Galileo, and other dedicated scientists surreptitiously continued to advance the science of healing.

Prerequisites: Medicine requires the Philosophy and Trade advances.

Benefit: Medicine gives the ability to build the Shakespeare's Theater Wonder.

Allows for: Medicine combined with University allows for the Chemistry advance.

Medicine combined with The Corporation allows for the Genetic Engineering advance.

Metallurgy

The science of metallurgy, the study of metals, became especially important as the European powers raced one another to create the latest technological advances in weaponry. As they searched for metals that were stronger and cheaper to manufacture, they developed guns superior to any in the world.

Prerequisites: Metallurgy requires the Gunpowder and University advances.

Benefit: Metallurgy gives the ability to build Cannon units.

Allows for: Metallurgy combined with Magnetism allows for the Electricity advance.

Metallurgy combined with Industrialization allows for the Steel advance.

The Monarchy

Monarchy developed from roots in the absolute rule of the tribal chief. This type of absolute power evolved into a lifelong and hereditary right to command (dynastic rule), and was later claimed to be conferred by divine sources.

Prerequisites: The Monarchy requires the Code of Laws and Ceremonial Burial advances.

Benefit: The Monarchy allows a civilization to declare Monarchy as their government (as the result of a revolution).

Allows for: The Monarchy combined with Masonry allows for the Feudalism advance.

Mysticism

As populations grew, a new class of spiritual advisors arose to generate popular rites of worship. The priests and priestesses of mysticism, often called oracles, claimed union with the divine through meditation and trance-like contemplation. Mysticism offered mortals an indirect link with the immortal powers they believed shaped their world.

Prerequisite: Mysticism requires the Ceremonial Burial advance.

Benefit: Mysticism gives the ability to build the Oracle Wonder.

Allows for: Mysticism combined with Mathematics allows for the Astronomy advance.

Mysticism combined with Literacy allows for the Philosophy advance.

Navigation

The sailors of antiquity studied the night sky, noting the positions and movement of particular stars. They realized that even when the shore was out of sight, they could steer by certain reliable stars. This crude, yet practical application of astronomy allowed the adventurous to sail into the unknown with a reasonable chance of finding their way.

Prerequisite: Navigation requires the Astronomy and Mapmaking advances.

Benefit: Navigation gives the ability to build Sail units.

Navigation gives the ability to build the Magellan's Expedition Wonder.

Allows for: Navigation combined with Mathematics allows for the Physics advance.

Navigation combined with Physics allows for the Magnetism advance.

Nuclear Fission

The development of a reasonably accurate model of the structure of the atom led physicists to attempt to intentionally split one in two. When a large, unstable atomic nucleus splits—fissions—the result is two or more smaller, more stable nuclei. Other by-products of this fission are a tremendous amount of energy and fast neutrons, plus a lingering, deadly radioactivity. The first intentional use of nuclear fission was in warfare, where the incredible power of an unconfined fission reaction produced an explosion rivaled only by the largest known volcanic eruptions.

Prerequisite: Nuclear Fission requires the Mass Production and Atomic Theory advances.

Benefit: Nuclear Fission gives the ability to build the Manhattan Project Wonder.

Allows for: Nuclear Fission combined with Electronics allows for the Nuclear Power advance.

Nuclear Power

Attempts to develop peaceful applications for the energy released by nuclear fission actually preceded its use in war. The eventual success of this endeavor turned out to be a mixed blessing. Engineers harnessed the immense energy produced by fission to create steam, which they then used to drive electric turbines, producing electricity. However, the radioactive materials necessary for sustained fission reactions are extremely lethal, disposal of the radioactive wastes generated by the process is difficult, and the risk of a catastrophic meltdown can never be completely eliminated.

> **Prerequisite:** Nuclear Power requires the Nuclear Fission and Electronics advances.
>
> **Benefit:** Nuclear Power gives the ability to build the Nuclear Plant improvement.
>
> **Allows for:** Nuclear Power combined with Superconductor allows for the Fusion Power advance.

Philosophy

In ancient Greece, literacy and an interest in the natural world were common in a burgeoning upper class. These people had leisure time, and they devoted much of it to debate and reasoning. Popular topics for discussion were the principles of thinking and being, logic and mathematics, and the natures of reality and existence. They called the study of thought Philosophy.

> **Prerequisite:** Philosophy requires the Literacy and Mysticism advances.
>
> **Benefit:** Philosophy yields no immediate benefit.
>
> **Allows for:** Philosophy allows for The Democracy advance.
> Philosophy combined with Writing allows for the Religion advance.
> Philosophy combined with Trade allows for the Medicine advance.
> Philosophy combined with Mathematics allows for the University advance.
> Philosophy combined with Industrialization allows for the Communism advance.

Physics

In its essential form, physics is the study of the many forms of matter and energy and of the way they interact with themselves and each other. The earliest physics was limited in scope to phenomena that were open to personal observation and experiment: motion, light, sound, and the like. The development of observing instruments quickly expanded physicists' horizons, as it has continued to do. Discoveries in physics rarely have direct application, but they reliably lead to advances in technology and in our understanding of the universe.

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Prerequisite: Physics requires the Navigation and Mathematics advances.
Benefit: Physics yields no immediate benefit.
Allows for: Physics combined with Invention allows for the Steam Engine advance.
Physics combined with Navigation allows for the Magnetism advance.
Physics combined with Combustion allows for the Flight advance.
Physics combined with Theory of Gravity allows for the Atomic Theory advance.

Plastics

One of the spinoffs of research into more efficient refining of crude oil was the invention of plastics, organic polymer materials that retain their strength when molded into almost any shape. Plastics were quickly adopted as cheap, sturdy substitutes for more traditional materials, and seemed at first to be a wonder of the Industrial Age. However, it turned out that most plastics do not decay naturally, making them difficult to dispose of. This has led to significant pollution problems.
Prerequisite: Plastics requires the Space Flight and Refining advances.
Benefit: Plastics gives the ability to build Space Ship Components.
Allows for: Plastics combined with Computers allows for the Robotics advance.
Plastics combined with Mass Production allows for the Superconductor advance.

Pottery

The invention of pottery was essential to the development of agricultural societies. To get the most out of seasonal crops and domesticated animals, a tribe needed sturdy, waterproof containers in which to store and protect surplus food. The discoveries of the properties of clay, the kiln, and the potter's wheel made dependable containers possible.
Prerequisite: None.
Benefit: Pottery gives the ability to build the Granary improvement.
Pottery gives the ability to build the Hanging Gardens Wonder.
Allows for: Pottery does not contribute to further advances until Future Tech.

Railroad

Originally developed in Britain and the eastern United States as a method of hauling heavy mining ores and freight, railroads outshone canals in their ability to operate across any ground and in nearly any weather. When railroads started carrying passengers as well as goods, the potential for safe, fast, inexpensive transport became clear. Railroads led to a dramatic increase in the amount of cargo, passengers, news, and troops that could move quickly over great distances.

Prerequisite: Railroad requires the Bridge Building and Steam Engine advances.

Benefit: Railroad allows Settlers units to build railroads.

Railroad gives the ability to build the Darwin's Voyage Wonder.

Allows for: Railroad combined with Banking allows for the Industrialization advance.

Recycling

Although scrap metals and other materials have been re-used in manufacturing processes for some time, true recycling is a broad-based, household-by-household effort. The increasing pollution generated by industry and consumerism, added to the depletion of natural resources, make the re-use of materials less a concern of efficiency and more a necessity for the survival of the human species. When recycled, old paper products spare trees, plastic containers save oil, and aluminum saves electricity.

Prerequisite: Recycling requires The Democracy and Mass Production advances.

Benefit: Recycling gives the ability to build the Recycling Center improvement.

Allows for: Recycling does not contribute to further advances until Future Tech.

Refining

Refining is a technique for separating and purifying the constituents of complex materials, especially those found in nature. Its most common use has been in harvesting fuel and other useful compounds from mineral tar and crude petroleum.

Prerequisite: Refining requires The Corporation and Chemistry advances.

Benefit: Refining gives the ability to build the Power Plant improvement.

Allows for: Refining combined with Space Flight allows for the Plastics advance.

Refining combined with Explosives allows for the Combustion advance.

Religion

The evolution of religion traces back to elementary systems of belief and practice concerning those events that primitive people felt were uncontrollable and mysterious, like weather and death. Religion gave people a sense that they could understand the world around them and, perhaps, plead to some greater force that would intervene on their behalf. When leaders began to claim special relationships with these forces, organized religion emerged to strengthen, codify, and eventually supplant individual belief. At times, a common religious belief, and the code of behavior that comes with it, has been the only uniting bond that held a fragmenting society together. Unfortunately, organized religion has also been responsible for inquisitions, wars of genocide, and the suppression of scientific inquiry.

Prerequisite: Religion requires the Philosophy and Writing advances.

Benefit: Religion gives the ability to build the Cathedral Improvement.
Religion gives the ability to build the J.S. Bach's Cathedral Wonder.
Religion gives the ability to build the Michelangelo's Chapel Wonder.

Allows for: Religion does not contribute to further advances until Future Tech.

The Republic

The concept of the republic first appeared in ancient Rome, where local provinces sent representatives to the Senate, which governed all Roman lands. Normally, both the head of state and the local representatives in a republic are elected; no one is granted a position by birth or divine right. A republican structure is one of the few systems of government that has been used successfully in nations of great size and cultural diversity. The republic allows unprecedented freedom, at least to a significant portion of the citizens, which in turn fosters economic growth.

Prerequisite: The Republic requires the Literacy and Code of Laws advances.

Benefit: The Republic allows a civilization to declare a Republican government (as the result of a revolution).

Allows for: The Republic combined with Explosives allows for the Conscription advance.
The Republic combined with Trade allows for the Banking advance.

Robotics

Isaac Asimov coined the term 'robotics' to describe the design and building of machines capable of performing human activities. Though Asimov envisioned mechanical humans (many of them more admirable than the biological humans they worked with), to date robots are essentially computer-controlled machine tools that can be programmed to perform relatively simple tasks. These primitive robots are especially useful for work that is monotonous, dangerous, or tiring for humans. Recently, robotics experts have begun designing machines that can sense changes in their environment and take limited independent action based on this information.

Prerequisites: Robotics requires the Computers and Plastics advances.
Benefit: Robotics gives the ability to build Artillery units.
Robotics gives the ability to build the Manufacturing Plant improvements.
Robotics gives the ability to build Space Ship Modules.
Allows for: Robotics does not contribute to further advances until Future Tech.

Rocketry

During World War II, military researchers found a way to turn an ancient Chinese curiosity into a practical long-range weapon. Rocketry is the development of projectiles propelled by the ejection of gases heated (and often generated) by the combustion of on-board fuel. With the realization that Newton's Second Law of Motion applied even in a vacuum, nations began using rockets to propel spacecraft and weapons with global range.

Prerequisite: Rocketry requires the Advanced Flight and Electronics advances.
Benefit: Rocketry gives the ability to create Nuclear units.
Allows for: Rocketry combined with Computers allows for the Space Flight advance.

Space Flight

Following the launch of Sputnik on October 4, 1954, the race into space began in earnest. The science of rocketry had advanced to the point where direct exploration of space became possible. Space flight advanced rapidly from simple sub-orbital flights to manned missions to Luna, Earth's moon. Today, despite balky governments and occasional setbacks, foresighted humans continue the push for manned space stations and more exploration missions, to guarantee that we will become a spacefaring species.

Prerequisite: Space Flight requires the Rocketry and Computers advances.
Benefit: Space Flight gives the ability to build Space Ship Structures.
Space Flight gives the ability to build the Apollo Program Wonder.
Allows for: Space Flight combined with Refining allows for the Plastics advance.

Steam Engine

The steam engine is a device that uses steam to generate power. Water, heated by burning fuel (usually coal or wood), turns to steam. This steam builds up pressure inside a container with a small exit hole. Once the steam pressure is high enough, it forces its way out through the hole, pushing a turbine in the process. The spinning turbine produces power as motion or electricity (or both).

Prerequisite: Steam Engine requires the Invention and Physics advances.

Benefit: Steam Engine gives the ability to build the Ironclad unit.

Allows for: Steam Engine combined with Bridge Building allows for the Railroad advance.

Steel

Developments in metallurgy lead to methods of producing steel. When a coal derivative called coke is blown through molten iron, the composition and properties of the metal change. Stronger, less brittle, and more resistant to corrosion than the iron from which it is made, steel was long the material of choice for warships, planes, and many other vehicles.

Prerequisite: Steel requires the Metallurgy and Industrialization advances.

Benefit: Steel gives the ability to build Battleship units.

Allows for: Steel combined with Combustion allows for the Automobile advance.

Superconductor

When an electric current passes through any material, some part of that current is lost to resistance. A material with little resistance to the flow of electricity is called a conductor, and these materials are useful for building electrical devices. Many conductors, when cooled to temperatures near absolute zero, lose all resistance to current. A material with no resistance to the flow of electricity is a superconductor. Recent developments hint that some unusual materials may be superconductive even at room temperatures.

Prerequisite: Superconductor requires the Plastics and Mass Production advances.

Benefit: Superconductor gives the ability to build the SDI Defense improvement.

Allows for: Superconductor combined with Nuclear Power allows for the Fusion Power advance.

Theory of Gravity

Isaac Newton recognized that every thing (mass) in the universe exerts an attraction on every other thing (mass), and he examined this attraction in detail in his theory of gravity. Newton postulated that gravity was a universal force that affected all matter. Albert Einstein's work led to a major reinterpretation of the theory of gravity. Scientists now believe that gravity affects energy as well as matter, and that it is a fundamental warping of the fabric of space-time. Some theorize that the force of this warping is transmitted by as-yet-unobserved particles called gravitons.

> **Prerequisite:** Theory of Gravity requires the University and Astronomy advances.
>
> **Benefit:** Theory of Gravity gives the ability to build the Issac Newton's College Wonder.
>
> **Allows for:** Theory of Gravity combined with Physics allows for the Atomic Theory advance.

Trade

One of the oldest and most widespread social institutions is the exchange of goods, or trade. The most basic level of trade is barter—two people exchanging items with each other. The introduction of regulated currency that could be exchanged for items resulted in easier, more convenient trade. Merchants soon roamed the world, connecting different lands with webs of economic interdependence.

> **Prerequisite:** Trade requires the Currency and Code of Laws advances.
>
> **Benefit:** Trade gives the ability to build Caravan units.
>
> **Allows for:** Trade combined with The Republic allows for the Banking advance.
>
> Trade combined with Philosophy allows for the Medicine advance.

University

In the Middle Ages, some royal governments and ecclesiastical organizations founded exclusive schools dedicated to training young men in specific professions. At that time, every university specialized in a single topic like law, theology, music, or medicine. A modern university consists of several faculties, or colleges, each of which has a specific curriculum. Then as now, the university was a center for basic research.

> **Prerequisite:** University requires the Mathematics and Philosophy advances.
>
> **Benefit:** University gives the ability to build the University improvement.
>
> **Allows for:** University combined with Astronomy allows for the Theory of Gravity advance.
>
> University combined with Medicine allows for the Chemistry advance.
>
> University combined with Gunpowder allows for the Metallurgy advance.

The Wheel

The wheel is one of the "five simple machines" that early civilizations used to make physical work easier. When combined with an axle, a wheel increase the amount of work a human or animal could do. It also increased the speed at which people could travel.

> **Prerequisite:** None.
> **Benefit:** The Wheel gives the ability to build Chariot units.
> **Allows for:** The Wheel combined with Construction allows for the Engineering advance.

Writing

The development of writing is considered one of the most important advances of civilization. History was long considered to begin with the invention of writing, although recent thinking also recognizes the value of oral histories. Though the first uses for writing were inventories on clay tablets and carved stone inscriptions, writers eventually replaced the oral historian as the chief record keeper. Information in a form that could be reliably transmitted from person to person made it possible for ideas and knowledge to be stored and passed on over distance and time.

> **Prerequisite:** Writing requires the Alphabet advance.
> **Benefit:** Writing gives the ability to build Diplomat units.
> Writing gives the ability to build the Library improvement.
> **Allows for:** Writing combined with Philosophy allows for the Religion advance.
> Writing combined with Code of Laws allows for the Literacy advance.

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An alphabetical list of improvements follows. This list includes the benefit of the improvement, the civilization advance that makes it possible, how many shield icons it costs to build the improvement, and how many coin icons it costs to maintain the improvement.

Aqueduct: *Allows a city to grow beyond a Population Roster of ten citizens.* In addition, an Aqueduct prevents the disasters of Fire and Plague. Aqueducts require the advance of Construction, cost 120 shields to build, and cost two coins per turn to maintain.

Bank: *Increases the luxuries and taxes generated by a city by 50 percent.* After all other considerations, including trade route bonuses, have been calculated, the banking bonus is added to the marketplace bonus and then applied. Banks require both the advance of Banking and the existence of a Marketplace improvement, cost 120 shields to build, and cost three coins per turn to maintain.

Barracks: *Allows a city to build veteran units, effectively increasing those units' attack and defense factors by 50 percent.* In addition, Barracks prevent the disaster of a Pirate Raid. No civilization advance is required to build Barracks. However, when you acquire the advance of Gunpowder, and again when you acquire the advance of Combustion, all existing Barracks become obsolete and disappear. After acquiring each advance you can rebuild Barracks. Barracks cost 40 shields to build. The maintenance cost of Barracks varies according to the difficulty level of your game and the number of times you rebuild. Both Barracks and their rebuilds cost one coin per turn to maintain at the Chieftain and Warlord levels. At Prince and King levels, the maintenance cost is one coin per turn for each Barracks, two coins per turn for each rebuilt Barracks, and three coins per turn for each second rebuilding. At Emperor level, the maintenance cost is two coins per turn for each Barracks, three coins per turn for each rebuilt Barracks, and four coins per turn for each second rebuilding.

Cathedral: *Makes four unhappy citizens content.* The effect of all Cathedrals in your cities is increased until the achievement of Communism if you possess Michelangelo's Chapel, a medieval Wonder of the World. A Cathedral requires the advance of Religion, costs 160 shields to build, and costs three coins per turn to maintain.

City Walls: *Triples the defense strength of all units inside the city.* This benefit occurs after considering the adjustments for terrain and veteran status. Only attacking Bomber and Artillery units bypass the benefits produced by City Walls. Cities defended by City Walls do not suffer population loss when a defending unit is destroyed and are protected from the Flood disaster. They require the advance of Masonry, cost 120 shields to build, and cost two coins per turn to maintain.

Colosseum: *Makes three unhappy citizens content.* The Colosseum requires the advance of Construction, costs 100 shields to build, and costs four coins per turn to maintain.

Courthouse: *Reduces corruption in a city by 50 percent.* It requires the advance of the Code of Laws, costs 80 shields to build, and costs one coin per turn to maintain.

Factory: *Increases the amount of raw materials generated by a city by 50 percent.* A Factory becomes obsolete and stops working if a Manufacturing Plant is built in the same city. The effect of a Factory can be increased by the presence of a Hydro Plant, a Nuclear Plant, or a Power Plant. It can also be increased by the Hoover Dam, a modern Wonder of the World. A Factory requires the advance of Industrialization, costs 200 shields to build, and costs four coins per turn to maintain.

Granary: *Decreases the amount of stored food used for population increase by 50 percent.* Having a Granary in a city also prevents the disaster of Famine. The Granary requires the advance of Pottery, costs 60 shields to build, and costs one coin per turn to maintain.

Hydro Plant: *Increases the raw materials generated by a city by 50 percent.* In addition, a Hydro Plant reduces the probability of pollution. A Hydro Plant can only be built by a city adjacent to a River or Mountain square. It requires the advance of Electronics, costs 240 shields to build, and costs four coins per turn to maintain.

Library: *Increases the knowledge production of a city by 50 percent.* The effect of all Libraries in your cities is increased until the achievement of Nuclear Fission if you possess Isaac Newton's College, a medieval Wonder of the World. A Library requires the advance of Writing, costs 80 shields to build, and costs one coin per turn to maintain.

Manufacturing Plant: *Increases the raw materials generated by a city by 100 percent.* With the presence of a Manufacturing Plant in a city, a Factory previously built in that city becomes obsolete and ceases to work. The effect of a Manufacturing Plant can be increased by the presence of a Hydro Plant, a Nuclear Plant, a Power Plant, or the Hoover Dam, a modern Wonder of the World. It requires the advance of Robotics, costs 320 shields to build, and costs six coins per turn to maintain.

Marketplace: *Increases tax revenue and luxuries by 50 percent.* The Marketplace becomes available with the advance of Currency, costs 80 shields to build, and costs one coin per turn to maintain.

Mass Transit: *Nulls the effect of a city's population increasing the probability of pollution.* Mass Transit requires the advance of Mass Production, costs 160 shields to build, and costs four coins per turn to maintain.

Nuclear Plant: *Increases the raw materials generated in a city by 50 percent.* A Nuclear Plant also reduces the day-to-day probability of pollution. However, a Nuclear Plant in a city suffering civil disorder risks a nuclear meltdown. The Nuclear Plant requires the advance of Nuclear Power, costs 160 shields to build, and costs two coins per turn to maintain.

Palace: *The farther away a city is from the Palace, the higher the probability of corruption (under most governments).* You can build a new Palace in a city other than your capital, but this removes the first Palace and relocates the center of your government. The Palace requires the advance of Masonry and costs 200 shields to build. Your original Palace costs nothing to maintain, but the maintenance of a new Palace costs five coins per turn.

Power Plant: *Increases the resources generated by a city by 50 percent.* However, it significantly increases the probability of pollution. The Power Plant requires the advance of Refining, costs 160 shields to build, and costs four coins per turn to maintain.

Recycling Center: *Reduces the probability of pollution by two-thirds.* It requires the advance of Recycling, costs 200 shields to build, and costs two coins per turn to maintain.

SDI Defense: *Nullifies the attacks of nuclear units against a protected city.* This improvement becomes available with the Superconductor advance, costs 200 shields to build, and four coins per turn to maintain.

Temple: *Makes one unhappy citizen content.* With the addition of the Mysticism advance, a Temple makes two unhappy citizens content. The Temple also protects a city from the Volcano disaster. The effect of a Temple can be doubled if your civilization possesses the Oracle, an ancient Wonder of the World, until the achievement of Religion. This improvement becomes available with the Ceremonial Burial advance, costs 40 shields to build, and one coin per turn to maintain.

University: *Increases knowledge resources by 50 percent.* A University can only be built in a city that already possesses a Library. With both the Library and the University in one city, knowledge resources are doubled. The effect of all Universities in your cities is increased until the achievement of Nuclear Fission if you possess Isaac Newton's College, a medieval Wonder of the World. Universities require the advance University, cost 160 shields to build, and cost three coins per turn to maintain.

MILITARY UNITS

The following are the military units that your civilization can build. The brief description of each unit includes any special abilities, the civilization improvement that makes it possible, and how many shield icons it costs to build the unit. The three numbers shown after the unit's name are its attack, defense, and movement factors.

Armor 10-5-3: *A group of tanks, or other armored fighting vehicles.* Due to its high attack factor and speed, Armor is one of the best units for conducting ground campaigns. Armor requires the advance Automobile, and costs 80 shields to build.

Artillery 12-2-2: *A group of self-propelled, heavy caliber artillery pieces.* Artillery ignores the City Walls improvement bonus because it can fire over the walls. It requires the Robotics advance and costs 60 shields to build.

Battleship 18-12-4: *A heavily armed and armored warship.* Battleships have a visibility range of two sea squares. They can conduct shore bombardments, but cannot carry ground units. Battleships require the Steel advance and cost 160 shields to build.

Bomber 12-1-8 (16): *A group of long-range aircraft designed to carry and drop bombs.* A Bomber can stay airborne for one turn (until it attacks, returns to base, or eight moves—whichever comes first) but must return to a friendly city or Carrier by the end of its second turn. Its visibility extends two squares over any terrain. Bombers ignore the City Walls improvement bonus in the same manner as Artillery, and can only be attacked by Fighters. Other units can not enter a square occupied by a Bomber, so they are useful in interdicting enemy movement. Bombers require the Advanced Flight advance and cost 120 shields to build.

Cannon 8-1-1: *A group of carriage-mounted, smoothbore cannon.* Cannons are excellent units on attack. Their arrival often opens a new round of offensive wars, especially when accompanied by Riflemen who can stack with them for defense. Cannons require the Metallurgy advance and cost 40 shields to build.

Caravan 0-1-1: *A group of pack animals or vehicles capable of conveying wares long distance.* Caravans ignore zones of control. They require the Trade advance and cost 50 shields to build.

Carrier 1-12-5: *An aircraft carrier is capable of acting as a base for Bombers, Fighters, and Nuclear units.* Carriers can carry up to eight air units and have an observation of two sea squares. They require the Advanced Flight advance and cost 160 shields to build.

Catapult 6-1-1: *A group of siege weapons designed to throw large, heavy objects with great force.* Catapults are useful in the attack and defense of cities, but are weak when alone and under attack. They require the Mathematics advance and cost 40 shields to build.

Cavalry 2-1-2: *A unit of mounted soldiers.* Cavalry are useful as early scouts and raiders because of their speed. They require the Horseback Riding advance and cost 20 shields to build.

Chariot 4-1-2: *A group of light carriages, normally mounted on two wheels and each carrying a driver and warrior.* Chariots are powerful attack weapons, but are weak on defense. They are also useful as scouts because of their speed. Chariots require The Wheel advance, and cost 40 shields to build.

Cruiser 6-6-6: *A very fast and moderately powerful warship.* Cruisers have an observation of two sea squares and can conduct shore bombardment. They can not carry ground units. Cruisers require the Combustion advance and cost 80 shields to build.

Diplomat 0-0-2: *A group of skilled negotiators.* Diplomats are useful for exploration and spying, but their lack of defense makes them vulnerable to aggressive rivals. They require the Writing advance and cost 30 shields to build.

Fighter 4-2-10: *A squadron of fighter aircraft.* Fighters are useful for scouting and attacking weaker enemy units. They are the only units that can attack Bombers. Fighters must return to a friendly base by the end of each turn. They require the Flight advance, and cost 60 shields to build.

Frigate 2-2-3: *A fast, sailing warship armed with a substantial number of guns.* Frigates can carry up to four ground units. They require the Magnetism advance and cost 40 shields to build.

Ironclad 4-4-4: *A fast, steam-powered warship armored with iron plating.* Ironclads can not carry other units. Ironclads are most useful in attacks on enemy ships and can be somewhat useful in shore bombardments. They require the Steam Engine advance, and cost 60 shields to build.

Knights 4-2-2: *A group of armored warriors mounted on large, powerful horses.* Knights have a useful combination of speed, defensive strength, and attack strength. They require the Chivalry advance and cost 40 shields to build.

Legion 3-1-1: *A well-trained force of infantry.* Legions are armed with shields, short swords, and throwing spears. They are good offensive units and are relatively inexpensive. Legions require the Iron Working advance, and cost 20 shields to build.

Mechanized Infantry 6-6-3: *A group of modern infantry mounted on armored personnel carriers.* Mechanized Infantry units are the best defensive ground unit in the game. Their good attack factor and speed make them useful for defending cities or other important sites. Mechanized Infantry requires the Labor Union advance and costs 50 shields to build.

Militia 1-1-1: *A band of citizens armed with crude weapons, such as tools and farm implements.* Militia units are available at the start of a new civilization and are one of the two units that have no required advance. They are normally only a stopgap until better units become available. Militia units cost 10 shields to build.

Musketeers 2-3-1: *An infantry company armed with muskets.* Musketeers have a defense factor high enough to be a significant defense early in the game. They are useful for replacing Phalanx units in positions that need to be defended. Musketeers require the Gunpowder advance and cost 30 shields to build.

Nuclear 99-0-16: *A missile weapon armed with a nuclear warhead.* A Nuclear unit can move between friendly cities and Aircraft Carriers. If it does not end its turn in one or the other and does not attack, it is destroyed. A Nuclear unit explodes when it attacks an enemy unit or city, destroying all military units in the target square and adjacent squares, regardless of nationality. Nuclear attacks also reduce a city's population and cause pollution. A Nuclear unit requires the Rocketry advance, costs 160 shields to build, and can only be built after the completion of the Manhattan Project, a modern Wonder of the World.

Phalanx 1-2-1: *An infantry company armed with long pikes.* Phalanx units are good for defending cities and other sites early in a civilization's history. No other unit is as cost effective for defense, until Musketeers become available. Phalanx units require the Bronze Working advance and cost 20 shields to build.

Riflemen 3-5-1: *An infantry company armed with rifles.* Riflemen units have excellent defense capabilities, and are useful for replacing Phalanx and Musketeers units. They require the Conscription advance, and cost 30 shields to build.

Sail 1-1-3: *A small, lightly armed ship, powered by sails.* Sailing ships can carry up to three other units. Their sails allow them to explore the oceans, rather than being restricted to coastal waters like Triremes. Sail units require the Navigation advance and cost 40 shields to build.

Settlers 0-1-1: *A group of hardy pioneers.* Settlers are the only units that can improve terrain and build cities. They are available at the start of a new civilization and are one of the two units that have no required advance. Settlers cost 40 shields to build.

Submarine 8-2-3: *A warship designed to attack from underwater.* Submarines have an observation of two sea squares, but can only be seen by enemy ships and air units when they occupy adjacent squares. They cannot carry ground units or conduct shore bombardments. Submarine units require the Mass Production advance, and cost 50 shields to build.

Transport 0-3-4: *A large, modern transport ship.* Transports are very useful for carrying large invasionary forces since they can carry up to eight other units. They require the Industrialization advance and cost 50 shields to build.

Trireme 1-0-3: *A small, ocean-going ship powered by oars.* The Trireme is the first available ship. It is useful for early seacoast exploration and for transporting Diplomats, Caravans, and other units to nearby islands and continents. If a Trireme unit is not adjacent to land at the end of its turn, it has a 50 percent chance of being lost at sea. A Trireme can carry up to two other units. Trireme units require the Mapmaking advance and cost 40 shields to build.

TERRAIN TYPES

A brief description of the terrain types and their production capabilities follows.

Arctic: *Glaciers, ice, and snow found near the polar regions.* Arctic squares are completely barren. Citizens working on an Arctic square yield no resources.

Desert: *A dry, barren, often sand-covered region.* Citizens working a Desert square produce some raw materials.

Irrigating a Desert square allows a worker to also produce food.
Mining increases the number of raw materials that a worker can produce.
Road construction allows a worker to also produce trade.
Building a railroad on a Desert square allows a worker to produce 50 percent more of each resource present (rounded down).

Desert squares receive a trade bonus if your civilization's government is either a Republic or a Democracy.

Forest: *A region heavily populated by trees and undergrowth.* Citizens working these woodlands produce a modest mixture of food and raw materials.

Changing a Forest square to a Plain square allows a worker to produce more food.

Building a railroad on a Forest square allows a worker to produce 50 percent more of each resource present (rounded down).

Forest squares have a defense bonus of 50 percent.

Grassland: *A large, open area of arable land.* The thick topsoil found on Grasslands makes excellent food producing areas for citizens working these squares. There is also a 50 percent possibility that a worker might produce raw materials.

Irrigating a Grassland square increases the amount of food a worker can produce.

Changing a Grassland square to a Forest square guarantees a worker will also produce shields.

Road construction allows a worker to also produce trade.

Building a railroad on a Grassland square allows a worker to produce 50 percent more of each resource present (rounded down).

Grassland squares receive a trade bonus if your civilization's government is either a Republic or a Democracy.

Hill: *A natural elevation of the Earth's surface.* Citizens working this area of rolling hills produce some food.

Irrigating a Hill square increases the amount of food a worker can produce.

Mining a Hill allows a worker to also produce raw materials.

Building a railroad on a Hill square allows a worker to produce 50 percent more of each resource present (rounded down).

Hill squares have a 100 percent defense bonus.

Jungle: *Land overgrown with tangled vegetation, especially in the tropics.* Citizens working on a Jungle square produce some food.

Changing a Jungle square to a Grassland square allows a worker to produce more food.

Changing a Jungle square to a Forest square allows a worker to also produce raw materials.

Jungle squares have a 50 percent defense bonus.

Mountain: *A mass of rugged terrain that rises to a great height.* Citizens working a Mountain square produce some raw materials.

Mining a Mountain square increases the number of raw materials that a worker can produce.

Building a railroad on a Mountain square allows a worker to produce 50 percent more of each resource present (rounded down).

Mountain squares have a defense bonus of 200 percent.

Ocean: *The expanse of salt water that surrounds the continents, covering most of the Earth's surface.* Citizens working an Ocean square produce trade and some food.

No improvements can be made to Ocean squares.

Ocean squares receive a trade bonus if your civilization's government is either a Republic or a Democracy.

Plain: *A flat, open expanse of land.* Citizens working a Plain square produce some food and some raw materials.

Irrigating a Plain square increases the amount of food a worker produces.

Changing a Plain square to a Forest square increase the amount of raw materials a worker produces.

Road construction allows a worker to also produce trade.

Building a railroad on a Plain square allows a worker to produce 50 percent more of each resource present (rounded down).

Plain squares receive a trade bonus if your civilization's government is either a Republic or a Democracy.

River: *A large, natural stream of water, flowing in a channel.* Citizens working a River square produce food, some trade, and have a 50 percent chance of producing raw materials.

Irrigating a River square increases the amount of food a worker produces.

Building a railroad on a River square allows a worker to produce 50 percent more of each resource present (rounded down).

River squares receive a trade bonus if your civilization's government is either a Republic or a Democracy.

River squares have a 50 percent defense bonus.

Swamp: *Coastal wetlands or flooded interior lands.* Citizens working a Swamp square produce some food.

Changing a Swamp square to a Grassland square increases the amount of food a worker can produce.

Changing a Swamp square to a Forest square allows a worker to also produce raw materials.

Tundra: *The vast, level, treeless, polar regions where the subsoil is frozen.* Citizens working these sparse lands of permafrost produce only a small amount of food.

No improvements can be made to Tundra squares.

CIV NET

Special Terrain

Caribou (Tundra): *The presence of Caribou indicates a potential for good grazing in an otherwise barren land.* Citizens working a Caribou square produce a good deal of food.

Caribou squares cannot be improved.

Building a railroad on a Caribou square allows a worker to produce 50 percent more of each resource present (rounded down).

Coal (Hill): *Coal represents rich deposits of coal or metal ores.* Citizens working Coal squares produce raw materials and some food.

Irrigating a Coal square increases the amount of food a worker produces.

Mining a Coal square increases the amount of raw materials a worker produces.

Building a railroad on a Coal square allows a worker to produce 50 percent more of each resource present (rounded down).

Coal squares have a defense bonus of 100 percent.

Deer (Forest): *Deer represent a good grazing area as well as an area rich in raw materials.* Citizens working a Deer square produce a good deal of food and raw materials.

Changing a Deer square to a Horse square increases the amount of raw materials a worker produces; however, the amount of food a worker can produce is decreased.

Building a railroad on a Deer square allows a worker to produce 50 percent more of each resource present (rounded down).

Deer squares have a defense bonus of 50 percent.

Fish (Ocean): *Fish represent rich locations of underwater banks and reefs where currents and nutrients create excellent fishing grounds.* Citizens working a Fish square produce a great deal of food and trade.

No improvements can be made to Fish squares.

Fish squares receive a trade bonus if your civilization's government is either a Republic or a Democracy.

Gem (Jungle): *Gems indicate the presence of precious stones, ivory, spices, salt, or other valuable commodities.* Citizens working a Gem square produce a vast amount of trade and some food.

Changing a Gem square to a Grassland square increases the amount of food a worker can produce, but greatly reduces the amount of trade produced.

Changing a Gem square to a Deer square increases the amount of food a worker can produce and allows a worker to produce raw materials; on the down side, trade is no longer produced.

Building a railroad on a Gem square allows a worker to produce 50 percent more of each resource present (rounded down).

Gem squares have a 50 percent defense bonus.

Gold (Mountain): *Gold represents a bonanza of gold or silver.* Citizens working a Gold square produce a tremendous amount of trade and some raw materials.

Mining a Gold square increases the amount of raw materials a worker can produce.

Building a railroad on a Gold square allows a worker to produce 50 percent more of each resource present (rounded down).

Gold squares receive a trade bonus if your civilization's government is either a Republic or a Democracy.

Gold squares have a 200 percent defense bonus.

Horse (Plain): *Horses represent the benefits of using domesticated animals, such as horses or oxen, to do work.* Citizens working a Horse square produce raw materials and some food.

Irrigating a Horse square increases the amount of food a worker can produce.

Changing a Horse square to a Deer square increases the amount of food a worker can produce, but decreases the amount of raw materials produced.

Road construction on a Horse square allows a worker to also produce trade.

Building a Railroad on a Horse square allows a worker to produce 50 percent more of each resource present (rounded down).

Horse squares receive a trade bonus if your civilization's government is either a Republic or a Democracy.

Oasis (Desert): *An Oasis indicates the presence of some water and local nutrients in a Desert.* Citizens working an Oasis square produce quite a bit of food and some raw materials.

Irrigating an Oasis square increases the amount of food a worker can produce.

Mining an Oasis square increases the amount of raw material a worker can produce.

Road construction on an Oasis square allows a worker to produce trade.

Building a railroad on an Oasis square allows a worker to produce 50 percent more of each resource present (rounded down).

Oasis squares receive a trade bonus if your civilization's government is either a Republic or a Democracy.

Oil (Swamp): *Oil represents the presence of mineral wealth, especially petroleum.* Citizens working an Oil square produce a good deal of raw materials and some food.

Changing an Oil square to a Grassland square increases the amount of food a worker can produce, but decreases the amount of raw materials produced.

Changing an Oil square to a Deer square increases the amount of food a worker can produce, but decreases the amount of raw materials produced.

Building a railroad on an Oil square allows a worker to produce 50 percent more of each resource present (rounded down).

Oil squares have a 50 percent defense bonus.

Seal (Arctic): *Seals indicate a source of food in an otherwise barren area.* Citizens working on a Seal square produce some food.

Seal squares cannot be improved.

Building a railroad on a Seal Square allows the worker to produce 50 percent more of each resource present (rounded down).

Note: If you convert a square containing a special terrain icon into another terrain type, the original speciality is lost. In some cases (mentioned above), a new special terrain icon might appear in the new terrain.

Colossus: The Colossus is a great bronze statue bestriding the gates or harbor mouth of the city. This amazing statue draws tourists from around the world, greatly increasing the trade of the area.

Double arrows are increased by one in every city map square that is already generating some trade. The effect on tourism stops working after the development of Electricity and the trade benefit is thereafter lost. The Colossus requires the advance of Bronze Working and takes 200 shields to build.

Great Library: Begun as a hobby by a local ruler, the Great Library is an obsession for the city. Its agents scour the world for books and manuscripts, making the Great Library the largest repository of knowledge in existence.

The Great Library gives you any civilization advance that two other cultures have acquired. However, it stops working after the development of The University. It requires the advance of Literacy and takes 300 shields to build.

Great Wall: The Great Wall was built not so much to keep invaders out, but to retard their escape with any loot. The effect is to deter the aggressiveness of neighbors.

When you possess the Great Wall, other civilizations always offer peace during negotiations. However, the effect of the Great Wall ceases after the development of Gunpowder. The Great Wall has no effect against human opponents. It requires the Masonry advance and takes 300 shields to build.

Hanging Gardens: The magnificent Hanging Gardens are a great marriage of engineering and beauty. Architecturally brilliant layered tiers of gardens are ingeniously supplied with water. Any visitor is overwhelmed by the grace of this man-made garden of paradise.

Possessing this beautiful monument brings great pleasure to the people of your civilization and results in an additional happy citizen in each of your cities. This magical effect of the Hanging Gardens expires with the development of Invention because, thereafter, the gadgetry of the garden design becomes cheaply available to everyone.

Knowledge of the Hanging Gardens is acquired with the advance of Pottery, and the Wonder takes 300 shields to build.

Lighthouse: The construction of this immense Lighthouse not only creates the greatest navigational aid of antiquity, but triggers a birth of seafaring skills and traditions. The result is great achievements by your ships and captains.

Possession of the Lighthouse increases sea movement rates by one square for all of your ships. However, the effect of the Lighthouse ceases working after the development of Magnetism, a new navigational aid that puts competent sailing within the grasp of anyone. The Lighthouse requires the advance of Mapmaking and it takes 200 shields to build.

Oracle: Building the Oracle gives the beliefs of your civilization a visible, unifying center that increases its effect on the people. The auguries of the Oracle are transmitted through the local Temples, exerting significant control over the people's lives.

The Oracle becomes available with the advance of Mysticism and doubles the effect of your Temples in making unhappy people content. It stops working after the development of Religion, which appeals more widely to the growing literate, intelligent citizenry. The Oracle takes 300 shields to build.

Pyramids: The Pyramids are the greatest and oldest of the ancient Wonders. The great construction effort requires tremendous government control of the entire nation.

A civilization that possesses the Pyramids can change government type without going through a period of Anarchy. In addition, that civilization may select any type of new government, not just those for which it has made the correct advance. For example, the possessing nation can become a Democracy, long before it acquires the advance of Democracy.

The Pyramids require the advance of Masonry and take 300 shields to build. However, the effects of the Pyramids expire after the advance of Communism is achieved.

Wonders of the Medieval Age

Copernicus's Observatory: Working alone on cold nights in the tower of his cathedral, this Polish priest re-established that the Sun was the center of the solar system, not the Earth. This fact had been recognized by ancient astronomers but lost in the Dark Ages, buried under superstition and religious dogma. Copernicus's findings were controversial but proven true, and were an important step in the rebirth of Western science.

Building Copernicus's Observatory doubles knowledge production in the city, after all adjustments for Libraries, Universities, and Scientists have been made. However, this benefit stops working after development of the Automobile. The advance of Astronomy makes the Observatory possible. It costs 300 shields to build.

Darwin's Voyage: Drawing on long research and the findings made on his scientific voyage to the Galapagos Islands aboard the *H.M.S. Beagle*, Charles Darwin developed the theory of evolution that was published in his masterwork, *The Origin of Species*. Darwin's arguments, and those of his contemporary, Alfred Russell Wallace, were so convincing that they were only disputed on philosophical grounds, mainly by religious fundamentalists. The theory of organic evolution was the foundation of all later research in the biological sciences.

The civilization that builds Darwin's Voyage immediately acquires two civilization advances, the one currently being researched and one other. The advance of Railroads makes Darwin's Voyage possible. The Voyage costs 300 shields.

Isaac Newton's College: Considered by many to be the greatest scientist of all time, Newton developed a theory of universal gravitation that explained both the motion of heavenly bodies and the falling of bodies to Earth. He also wrote important works on calculus, optics, the spectrum of light, fluid mechanics, the motion of comets, and the motion of tides, and he built the first reflecting telescope. For 32 years he was a professor of mathematics at Cambridge University.

Possessing Newton's College increases the knowledge benefit of all your Libraries and Universities. It may be built once you have acquired the Theory of Gravity, but stops working after the development of Nuclear Fission. The College requires 400 shields to build.

J.S. Bach's Cathedral: Johann Sebastian Bach was one of the great composers of the Western world. Born into a family of distinguished musicians, he was noted as a virtuoso performer during his life. In the time since his death, Bach has become even more revered for the genius of his music. The majority of his compositions were written while he was serving the church, and most of these pieces were written for the organ and dedicated to the glory of his God.

Possessing Bach's Cathedral decreases unhappy citizens on the same continent by two per city. The Cathedral can be built following the advance of Religion and costs 400 shields. The power of Bach's music does not expire.

Magellan's Expedition: Ferdinand Magellan, a Portuguese navigator, led the first expedition that circumnavigated the globe. Sponsored by Charles I of Spain, Magellan was searching for a westward route to the spice islands of the Moluccas. Along the way he discovered the straits at Cape Horn that bear his name. Unfortunately, he died in the Philippines fighting natives. Only one of his five original ships and few of his men reached home, but the expedition proved that the Earth was round.

Possessing Magellan's Expedition increases sea movement rates by one square for all of your ships. The expedition becomes possible after the advance of Navigation and never expires. It costs 400 resources to build.

Michelangelo's Chapel: Michelangelo Buonarroti was perhaps the greatest of the Renaissance sculptors and painters. This artist spent most of his active career working for the church in Rome and the Medici family in Florence, and he is best known for his sculpture of David and the painting of the Sistine Chapel. He is renowned for the beauty of his work and the influence it had on succeeding generations.

You can build the Chapel after achieving the advance of Religion. *Possessing it increases the benefits of Cathedrals throughout your civilization until the advance of Communism diminishes the strength of Religion.* The Chapel takes 300 shields to build.

Shakespeare's Theatre: William Shakespeare, an English dramatist and poet, is considered by many to be the greatest of all playwrights. Little is known of his life, and he seems not to have become rich or famous in his own day. Not long after his death, however, his fame began to grow and his influence on the English language has increased with the renown of his plays, which are still performed regularly around the globe.

The Theatre can be built after achieving the advance of Medicine. *Thereafter, all unhappy people in the city are content, until the advance of Electronics makes the Theatre obsolete.* It costs 400 shields to build.

Wonders of the Modern Age

Apollo Program: The culmination of the space race of the 1960s, the Apollo Program put several manned expeditions onto the Moon. Overcoming many difficulties and dangers in an astoundingly short time, the Apollo team members produced the single greatest technological achievement in history. Their success suggests that humankind might not be restricted just to Earth, but might eventually expand into space.

The Apollo Program might be built after achieving the advance of Space Flight. *It allows construction of spaceships by any culture having the civilization advances necessary to build parts and also allows you to see the location of all cities in the world.* The Apollo Program costs 600 shields to build.

Cure for Cancer: Of the diseases that continue to plague humankind, the many forms of cancer remain the most feared. Despite huge efforts to find cures for these maladies, they continue to take their toll each year. The developing science of genetic engineering offers new hope for a cure.

After the development of the advance of Genetic Engineering, you can work on the Cure for Cancer. *Possessing the Cure creates +1 happy citizen in all cities of your civilization.* The Cure for Cancer costs 600 resources.

Hoover Dam: Huge hydroelectric power sources were first developed in the United States during the 1930s, and have since been built throughout the world. Converting the kinetic energy of falling water into electric power has proven to be an inexpensive method of generating electricity that normally does little damage to the environment.

The Hoover Dam can be built after the advance of Electronics is acquired. *The Dam provides electric power to all cities on the same continent, increasing the resources generated by the city by 50 percent. In addition, the Dam reduces the probability of pollution from these cities.* The Hoover Dam costs 600 shields to build.

Manhattan Project: The Manhattan Project was the code name for the United States' effort to develop atomic weapons during World War II. The success of this project made possible weapons which threatened extinction for all life on Earth. These weapons also, however, offered an umbrella of peace due to their destructive capability. Massive global war became obsolete, because all of the participants were doomed—win or lose.

Now, surviving the Nuclear Age and environmental poisoning are the two of the greatest challenges of industrial civilization.

Once any civilization completes the Manhattan Project, all cultures in the world can begin building nuclear weapons, if they have the proper civilization advances. The Manhattan Project itself can be built once the advance of Nuclear Fission has been achieved. The Project costs 600 shields to build.

SETI Program: The search for extra-terrestrial intelligence is a research effort set up to find an answer for one of humankind's most nagging questions: "Are we the only intelligent life in the universe?" Being the first civilization to contact other intelligent life could bring great glory and, perhaps, technological advantages.

You can build the SETI Program when your civilization acquires the advance of Computers. *Thereafter, the knowledge generated by your cities is increased by 50 percent, unless the Program is destroyed or captured by a rival.* The SETI Program costs 600 shields to complete.

United Nations: The United Nations is an international organization that meets to solve international problems through diplomacy. Its goal is world peace and security. It offers a forum for debate and also works to aid the economic and technical development of poorer nations.

Building the United Nations is a great achievement for a civilization. It is available after the advance of Communism. *During negotiations with other civilizations, they always offer to make peace with you. This allows at least a temporary resolution to all wars you are engaged in.* The United Nations costs 600 shields to build.

Women's Suffrage: One phenomenon of the cultural, philosophical, and social changes that followed the Industrial Revolution has been a steadily increasing respect for the rights and abilities of women. Women demanded and won the franchise of the vote in the Western Democracies—after demonstrating their ability to perform well almost any job while the men were off to war. This symbolic freeing from historic social hierarchies has led to increasing real freedom, at least in the West.

Women's Suffrage becomes available after the advance of Industrialization. *Under a Republic or Democracy, units away from their home city create one less unhappy citizen than normal for a civilization that possesses Women's Suffrage.* It costs 600 shields to achieve.

Any computer-controlled civilizations involved in a game are ruled by significant figures from history. For example, if the AI is in charge of the Greeks, the Greek ruler is Alexander the Great.

The strengths and weaknesses of each AI leader are reflected in his or her methods of rule and management. Alexander conquered most of the known world in his time, so you can reasonably expect him to be similarly aggressive if he appears as one of your rivals. Each AI ruler in *CivNet* is rated in three categories: Aggression, Development, and Militarism. Taken together, these three factors determine the style of growth that you can expect from a civilization under that leader.

Aggression

This is a measure of how likely a leader is to start a fight with his or her neighbors. At one end of the scale, aggressive leaders are likely to embroil themselves in a new war even when their civilization is already involved in several. At the other end, friendly leaders normally offer peace even when they know they could squash you like a bug.

Development

Expansionist leaders are interested in the physical size of their civilization's territory. They devote resources to building Settlers and sending them out to found new cities. Perfectionist leaders, on the other hand, are more interested in developing individual cities and improving the terrain around them. While both types seek expansion, they do so at greatly different speeds.

Militarism

A leader who is militaristic focuses the civilization's research toward technologies that lead to better weapons and stronger military units. The other side of the coin is the civilized leader, whose researchers weight their work toward advances that allow economic and political improvements.

You can learn about the personality of a civilization's leader if you have established an embassy in one of their cities. Click the INTELLIGENCE ADVISOR option from the ADVISOR menu to see the report on which the personality characteristics appear near the leader's name. If any of the three categories is not mentioned, the leader is neutral in that area. For example, Elizabeth I is listed only as Expansionist. This indicates that she is neutral in terms of Aggression and Militarism. Be aware that these personality traits are only tendencies, and that all of the AI leaders are capable of any type of action, depending on the circumstances.

Leader Biographies

The leaders that the game might use, and the civilization each rules, are listed below. We've also included brief biographical notes and a hint or two about what sort of behavior to expect from each.

Abraham Lincoln (Americans)

A largely self-educated man, Lincoln rose from humble beginnings to become one of the United States' greatest Presidents. His formidable intellect, political skill, and unwavering dedication to principle were critical factors in the fledgling democracy's fight for survival. Lincoln is most remembered for his emancipation of slaves and for leading the United States through the Civil War, holding the nation together when half of the United States attempted to secede.

In *Civilization*, Lincoln and the Americans are most likely to become a democracy. While they look to expand, they are not overly aggressive.

Alexander the Great (Greeks)

Alexander inherited the throne of Macedonia in 336 BC, and soon after, he managed to bring the entire Iberian Peninsula under his rule. At the head of an allied Greek army, he set out on one of the most successful military campaigns in history. Within twelve years, Alexander swept southward to take control of all the lands of Egypt, then eastward to conquer the enormous Persian empire and the western part of the Indian subcontinent. Historians still argue over Alexander's reasons for stopping there. At the age of 33, he succumbed to fever and died. In the short span of his life, Alexander established himself as one of the greatest generals of all time.

If you encounter Alexander and the Greeks, expect them to expand aggressively and not to shrink from warfare.

Elizabeth I (English)

She inherited a strife-torn, failing nation, ruled it as queen for 45 years, and built it into one of the leading powers of Europe. Elizabeth's primary adversaries were the Spanish under Philip II. After the 1588 defeat of its Armada at English hands, however, Spain went into a steady decline and was no longer a problem. Elizabeth is remembered for presiding over important domestic reforms, as well as for her shrewd diplomatic and military maneuvers. During her reign, the English economy and culture blossomed. Elizabeth set the foundations of what would become a worldwide British empire, though she did not quite live long enough to see the establishment of English colonies in North America.

Elizabeth is a formidable foe, who expands aggressively while competently managing the growth of English cities.

Frederick (Germans)

Frederick William II, known as Frederick the Great, ruled Prussia for nearly 50 years. His (unexpected) quality as a leader and decision-maker helped him turn Prussia into the dominant military power of Europe. Frederick also promoted important reforms at home, patronized the arts, and was a champion of religious liberty. He was considered by many to epitomize the enlightened monarch and warrior king, one of the great symbols of German culture.

Under Frederick, the Germans are very aggressive and generally unpleasant neighbors. Keep a wary eye on them and don't hesitate if they let down their guard.

Genghis Khan (Mongols)

After uniting the Mongol tribes (a feat in itself), Genghis conquered the Chin Empire of northern China. For the next nine years, his armies rode westward, overrunning everything in their path and extending the Khan's power well into eastern Europe. The Mongol hordes relied on bowmen mounted on strong horses. These warriors were outstanding riders and marksmen. Their recurved bow was a much more effective design than that used by the Europeans, as it was both compact and powerful. From his capital at Karakorum, south of Lake Baikal, the Great Khan presided over one of the largest land empires in history.

In *Civilization*, the Mongols can be expected to expand very aggressively at the expense of the development of individual cities.

Hammurabi (Babylonians)

Leader of one of the earliest recorded civilizations, Hammurabi is most noted for having his system of justice written down as a formal code of laws. His empire encompassed the eastern part of the "fertile crescent," an area of early human advancement centered on the Tigris and Euphrates rivers. Though Hammurabi was a competent ruler and builder, his empire was eventually destroyed by raids from Asia Minor.

The Babylonians are generally more concerned with building and internal growth rather than aggressive or continual expansion.

Julius Caesar (Romans)

One of the more controversial characters of history, the first Caesar was both a staunch defender of the people's rights and an ambitious politician who brought about the end of the Roman Republic. Whatever else he was, Caesar was a brilliant general. Under his leadership, Roman legions conquered Gaul in a classic campaign that is still studied. They swept western Europe, then invaded southern Britain. After defeating Pompey in a civil war, Julius Caesar declared himself ruler of Rome for life. Though he was eventually assassinated by those near him, he nevertheless set the foundation that made the Roman Empire possible.

The Romans are tough foes, and they strike a firm balance of expansion, conquest, and development.

Mahatma Gandhi (Indians)

The father of Indian independence from British rule, Mahatma Gandhi was a skilled politician and a respected spiritual leader. His inventive campaign of passive resistance was a model of nonviolent revolution. After India's independence was assured, Gandhi worked tirelessly to end to the caste system of discrimination and to promote peaceful co-existence between the two major religious groups of India (the Hindus and Muslims) and their various subgroups. A fanatic Hindu shot Gandhi while the Indian leader was engaged in a prayer vigil for peace.

The Indians under Gandhi are not aggressively expansive, and they are more likely to develop areas they can settle peaceably. However, this civilization determinedly stalks advances and can be a strong rival in a space race.

Mao Tse-tung (Chinese)

Considered the founder of the People's Republic of China, Mao rose to power in the 1930s, leading the Long March and becoming head of the Chinese Communist Party. When the party eventually defeated the Nationalists, he took the reins of the new nation as Chairman. Mao held power until 1958, when the failure of many of his programs eroded his popular base of support. He later regained power, after directing the four year Cultural Revolution.

The Chinese are generally concerned with building a strong civilization and do not often seek to expand aggressively.

Montezuma (Aztecs)

The emperor of the Aztec Empire at the time of the Spanish Conquistadors was considered by many of his subjects to be a brutal despot. Cortez took advantage of Montezuma's unpopularity, enlisting the aid of 30,000 turncoats for his march of conquest on the Aztec capital. Some historians speculate that Montezuma's belief that the Spanish were the descendants of gods kept him from recognizing the danger they represented and adequately preparing his formidable army.

The Aztecs are fierce warriors and dangerous opponents. They are quite capable of carrying on competent military campaigns while simultaneously building a strong empire.

Napoleon (French)

Napoleon rose quickly to power during the turmoil of the French Revolution and the ensuing chaos. He became part of the ruling Consulate that resulted from a Paris coup, and spent much of his time afterward consolidating his power. Eventually, he had himself crowned Emperor in 1804. For the next eleven years, Europe suffered almost constant war. At its peak, the French Empire stretched from Madrid to Moscow. It took a coalition of European powers to defeat the Emperor. After his abdication at Fountainbleu, the British, Prussians, Austrians, and French sent Napolean to exile on the island of Elba. However, he soon escaped and rallied the common people against the Royalists. Wellington finally completed the defeat of Napoleon the Emperor at Waterloo. He remained in exile on St. Helena until his death.

The French are imperialistic conquerors. Though they are perhaps not as dangerous as the Aztecs or Greeks, they are certainly a threat, and they bear watching.

Rameses (Egyptians)

The Pharaoh Rameses II usurped the throne from his brother and ruled Egypt for 33 years. Under Rameses, Egypt spread until it reached north to Syria and south as far as the fourth cataract of the Nile. He is noted for erecting an abundance of imposing monuments, temples, and other buildings throughout the land. However, the triple burdens of great luxury, widespread slavery, and the growing use of mercenary armies during his reign fostered an indolence that contributed to the eventual decline of Egypt.

The Egyptians under Rameses are great builders. Expected them to construct mighty cities. Egypt can be a serious threat if allowed to expand over a large area.

Shaka (Zulus)

Shaka united the tribal villages of the Zulu under his rule and established the Zulu army. It took him little time afterward to conquer all of his nearby enemies and establish Zululand. He and his descendants ruled uncontested until the imperialist Europeans arrived at the Zulu border. Though the Zulus were without peer as individual warriors, they proved to be no match for organized European armies with superior weapons.

The Zulus are fierce warriors and are not afraid to pick a fight. Be wary if you discover them next door early in the game. They are not particularly interested by advances, however, and you should be able to gain an early technological advantage over them.

Stalin (Russians)

A long-time Bolshevik, Joseph Stalin emerged triumphant from the power struggle that followed Lenin's death, contrary to Lenin's expressed wishes. As the leader of the Soviet Union, Stalin quickly implemented his plans for the forced collectivization of agriculture, rapid industrialization, and a huge military buildup. These policies were politically feasible only because of Stalin's bloody purges—a reign of state terror that resulted in millions of deaths. After repelling the Nazi invasion, for which defense 20 million more Russians gave their lives, Stalin was able to establish a hegemony over most of Eastern Europe that lasted nearly half a century.

Under Stalin, the Russians are a dangerous opponent. They are capable of aggressive expansion, but often fall behind in the development of cities and advances.

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APPENDIX: CIVILIZATION RULERS

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